Timber Management Guidelines for the Protection of Tourism Values

Ontario

Ministry of Natural Resources

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A. Purpose

This manual is intended to provide assistance and direction to a broad audience of government and private sector people involved in timber management decisions. This audience includes staff of the Ministries of Natural Resources and Tourism and Recreation, managers in the forest industry at all levels, and members of the tourist industry who own or operate resource-based tourist establishments.

The manual will also be of interest to a wide variety of user groups and individuals seeking information on the timber management process. Cottagers, campers, canoeists, hikers, snowmobilers and cross-country skiers can all be affected by timber management decisions.

Such a broad audience is or should be involved in the planning and implementation of timber harvesting and regeneration in areas requiring the protection of tourism values. No manual is intended to be the sole or even primary means of determining if such values exist, although it can assist in defining some of the options available. Nor is it a replacement for professional forestry, engineering or landscape architectural judgment regarding the necessities of a particular site. The main application of the guidelines in this manual is intended to occur **after** such values are confirmed, through a comprehensive consultative process, and **before** any harvesting within the area takes place.

These guidelines cover a great variety of conditions. Variables include the many types of tourism values occurring along Ontario's lakes and public roads, and the full spectrum of biophysical environments in which such values are located. Just as no single guideline can apply to every situation, there will be situations where a number of alternative approaches would be acceptable. Therefore, the guidelines included in this manual are intended to equip the resource manager with a variety of options to choose from in dealing with the particular attributes of a specific operational area. In conjunction with related guidelines for other resource values such as fisheries and moose habitat, they represent Ministry of Natural Resources policy which protects such values while permitting acceptable methods of harvesting to take place.

B. A New Approach to Protecting Tourism Values

The traditional means of protecting non-timber users and uses in areas of logging activity has been the establishment of timber reserves which prohibit harvesting of any kind. Such reserves, usually designed to a 120 m (400 ft) depth around most lakes and along most rivers and public highways, have been embraced by some people as their only means of protection, or as the only reasonable way of managing vast natural resources with limited management staff. Proponents also point out that reserves at least screen from public view the immediate negative impacts (visual and other) of harvesting.

Other people have described the use of reserves as being either a waste of valuable timber resources or a totally passive means of avoiding true management responsibility. They emphasize the short term effects, gradual renewal of the forest, and need for better public understanding of timber management principles. If harvest practices are sound, then they need not always be hidden from view. If they are unsound, then something more positive than merely hiding them from view should be done about it.

Improved resource management involves taking a more comprehensive approach to lakes, roadsides, and other resources of value to tourism, whereby special values can be carefully assessed, and modifications to normal operations can be prescribed so that the values remain intact or even enhanced. This improved process has now been adopted in Ontario, and contains provisions to consider and protect tourism values in a variety of ways through the process of planning for timber management. Reserves still serve a purpose, and will continue to have an important place in timber management in the province. However, they will no longer represent the only tactic for protecting tourism values in areas of timber operations.

C. How to Use this Manual

The remainder of the manual is divided into five parts. Section **1.0 PROCESS** outlines the procedures, both mandatory and recommended, that apply to the planning and design of operations within areas exhibiting tourism values. The relationship of these procedures to the Environmental Assessment Act is also explained.

Section **2.0 BASICS** provides a summary of the kinds of forests, tourism values, and logging practices found throughout northern Ontario, and their regional variations. New users of the manual should spend a little time in reviewing these summaries.

Section **3.0 CONCEPTS** outlines some important procedures and judgments upon which the guidelines are founded. Yes, there is no single right way of modifying harvests. And no, there is no way of avoiding the exercise of personal judgment. While the manual attempts to equip its readers with a variety of options, some opinions are also expressed.

This section emphasizes doing the right things (what do we want to achieve?), and being flexible about doing things right (how can we best achieve it?). The former is important because the objectives must be clear and reasonable. The latter is important in terms of avoiding unacceptable costs, and fostering self-sufficiency in the field.

Section **4.0 GUIDELINES** provides the alternatives available to modify harvesting for specific purposes. Access control, visual problems, noise and other aspects of tourism values protection are included here.

Section **5.0 EXAMPLES** provides a range of examples of typical results to be expected from the application of this manual to a variety of hypothetical situations.

The manual has been designed for both field and office use, hence its small size. Horizontal index tabs are used throughout the manual to allow quick access to the five main headings, while vertical tabs identify subheadings within the Guidelines section.

D. Acknowledgements

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1.1 A New Policy

This Chapter presents a discussion of the Policy for the Integration of Other Resource Values in Timber Management as it relates to the tourist industry, and its mandatory application to timber operations in Ontario.

The guidelines contained in this manual offer many options to both the timber and tourist industries for their mutual consideration and collaboration. While no individual guideline drawn from within this manual is therefore mandatory in or of itself, the application of the policy, and the process of collaboration is not discretionary.

1.2 Relationship to Environmental Assessment Act

Timber management in Ontario is subject to a number of controls. The Environmental Assessment Act (EAA) establishes general provisions for the protection of all public resources. Within this framework, a Class Environmental Assessment has been prepared which sets out the rationale for timber management under the EAA. A separate manual for planning Timber Management on Crown Lands in Ontario establishes specific environmental requirements for all timber operations as a group. In doing so, it sets out a procedure with which each individual operation must comply, including the method of planning, the evaluation of alternatives, the selection of the most appropriate action, and the involvement of the public in the overall process.

In addition to the Environmental Assessment procedures, the Policy for the Integration of Other Resource Values in Timber Management (which includes these guidelines) apply to all timber operations in Ontario.

1.3 Areas of Concern

Areas of Concern are key ingredients in the timber industry's compliance with the Class Environmental Assessment for Forest Management. The Class EA sets out two levels of planning. The broadest level is the Timber Management Plan, which describes the Crown's and/or timber licensee's intended harvesting operations for a given area over the next 20 years. The second level is the Plan of Operations, which accomplishes two objectives. First, it identifies the actual areas of logging operations for a five-year period, and second, it provides any revisions to the Timber Management Plan warranted by changing social, physi-

cal, biological, or economic conditions.

An Area of Concern will begin its evolution in the Timber Management Plan as a "**preliminary** area of concern," defined as a geographical area of value to non-timber users or uses which **could** be affected by forestry operations, and which **may** require modifications to those operations. Such areas will usually be identified in broad terms as specific lakeshores, travel corridors, or other features noted by the public or in various resource inventories as having a special value. At the Plan of Operations stage, these areas will be investigated further, with any confirmed values becoming "**specific** areas of concern." In this process, some of the previously identified areas of concern may be eliminated from, and some new areas may be added to, the updated Timber Management Plan (due, for example, to the earlier data being incorrect, the occurrence of a fire, the establishment of a new tourist operation, changes in fishery management objectives, or other valid reasons).

1.4 Decisions on Options

The identification of a specific area of concern requires further evaluation before any logging operations can be planned. The evaluation becomes in effect a decision on such operations to be made from four choices:

- make provisions regarding access to the resources,
- implement modified operations,
- establish a reserve (which prohibits any logging), and/or
- select normal (unmodified) operations.

The first and second options should be chosen if the available information **establishes clearly** that the value will be harmed by uncontrolled access or normal logging practices. The third option should be selected if either the information or the possible impact requires further study, or if any of the other options will unacceptably diminish the value. The fourth option should be selected if the value is such that it will not be harmed by normal logging practices, including development of access roads.

1.5 Summary

The overall three step planning process for the preparation of a five year Plan of Operations is summarized in Figure 1.

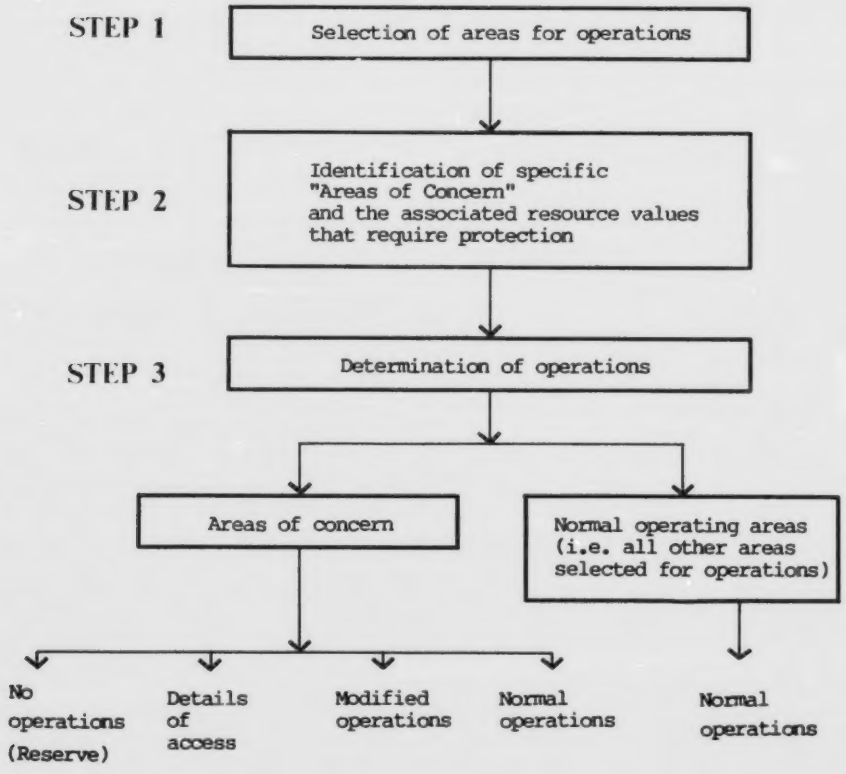
Figure 2 provides further details of the mandatory process by which operational decisions will be made under the Environmental Assessment Act. Three important aspects of the process should be emphasized:

- the existence of important general provisions for environmental protection that apply to even normal operations (eg. silvicultural practice requirements, road construction specifications, etc.)
- the availability of other guidelines which will apply to logging operations (such as guidelines for the protection of fisheries, and moose habitat.
- the provision for a combination of options to be selected to protect the values identified in an Area of Concern.

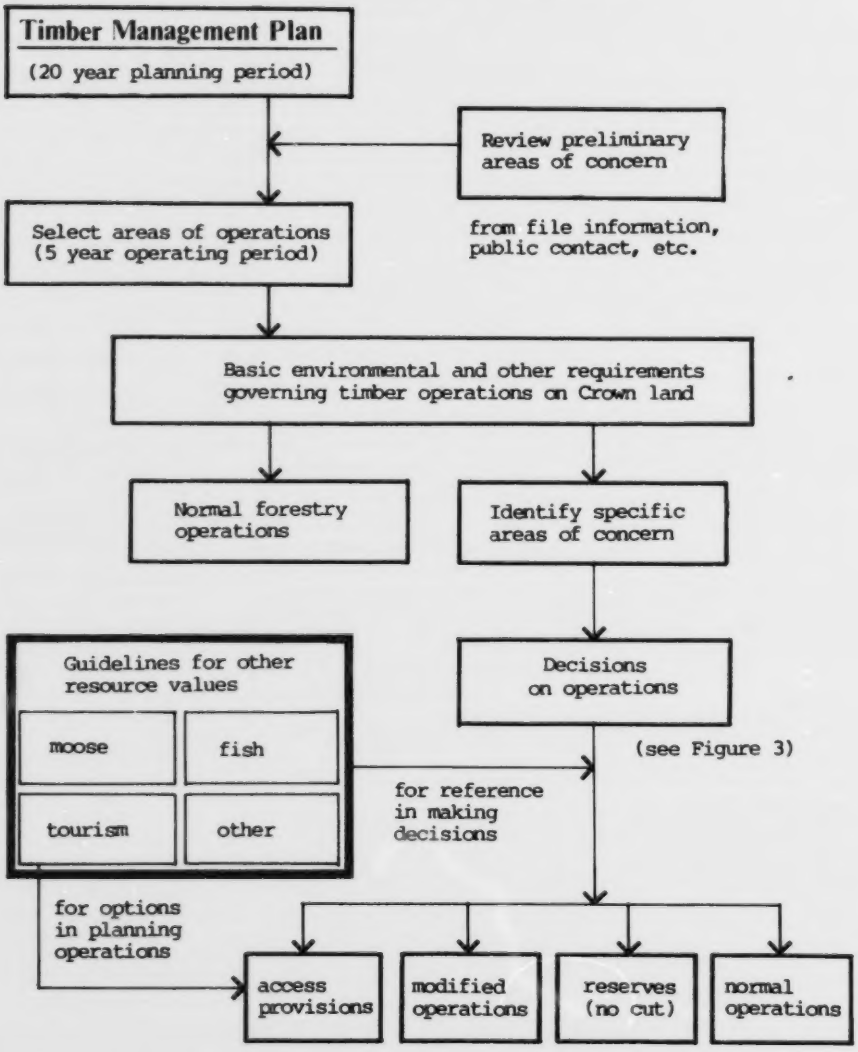
Thus, the guidelines presented in this manual are not the only means to protect tourism in Ontario, and the natural resource values upon

THE PLANNING PROCESS FOR THE INTEGRATION OF OTHER RESOURCE VALUE IN TIMBER MANAGEMENT - FIVE-YEAR PLAN OF OPERATIONS

Figure 1.

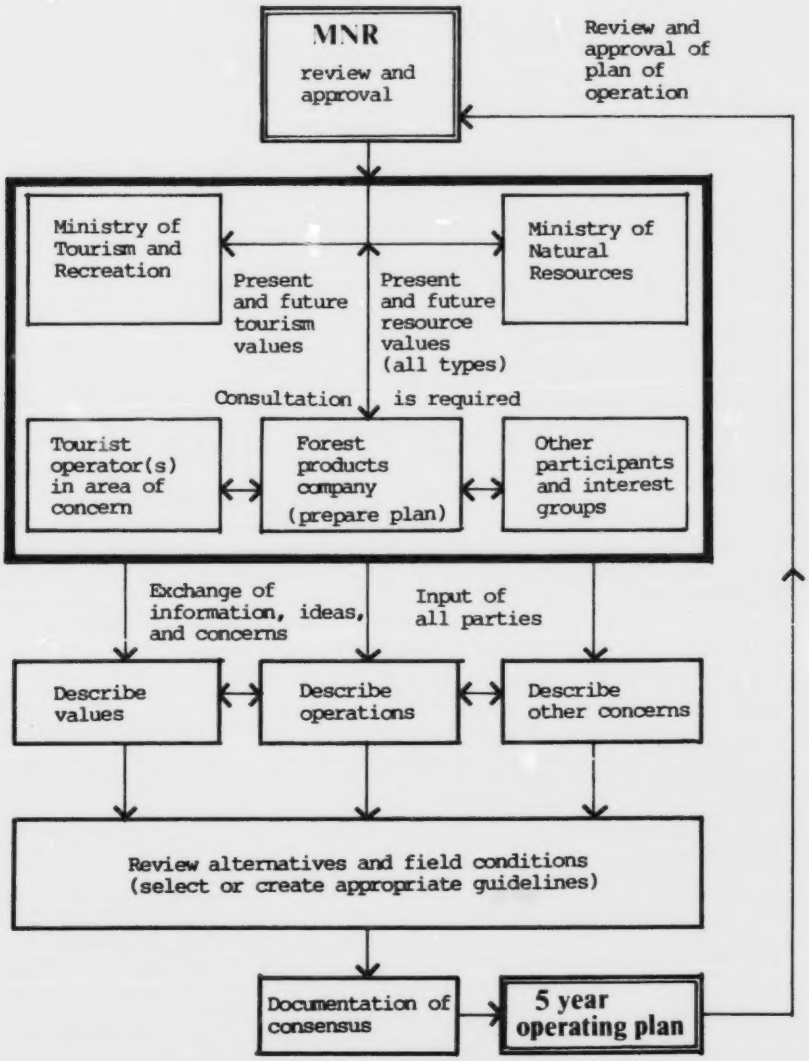


MANDATORY PROCESS FOR THE INTEGRATION OF OTHER RESOURCE VALUE IN TIMBER MANAGEMENT Figure 2.



collaborative process may result in one, or any combination of these choices

RECOMMENDED PROCESS FOR REACHING DECISIONS ON AREAS OF CONCERN Figure 3.



which tourism is dependent, nor is such protection confined to a single method.

This manual, while intended to apply to actual operations after such decisions are made, can of course be an important consideration in making the above evaluations.

Figure 3 presents the broader picture of the recommended process by which a resource manager should work with the tourist operator in reaching a consensus on the most appropriate decisions to make. It also shows the important involvement of other public groups and individuals in the process, and the role of the Ministry of Tourism and Recreation in defining future values and providing other assistance. Finally, the approval and monitoring role of the Ministry of Natural Resources is indicated, as well as its relationship with all other participants in the process.

On Crown Management Units, the Ministry itself will be responsible for the preparation of management plans and plans of operation.

2.1 The Tourist Industry

The tourist industry within timber management units on Crown land takes a variety of forms, and depends on the maintenance of a number of important values. Public roads and Crown land recreation facilities, such as public access points, are also components of tourism.

In Ontario, timber management units on Crown land occur within two distinctly different forest regions: the Boreal and the Great Lakes-St. Lawrence Forest Regions (Figure 4).

PROVINCE OF ONTARIO
FOREST REGIONS

(Figure 4).

The choice of the particular method(s) of implementing the individual component activities of timber management within these two regions is site-specific. Some sites offer a variety of choices, others offer very few.

The following descriptions provide a brief summary of the tourist operations and values addressed by this manual, the three silvicultural systems employed in Ontario, and the alternative logging techniques which are appropriate to each system.

2.1.1 Main Base Lodges

One of the largest single investments by the tourist industry is the development of main base lodges, offering accommodation and dining facilities and staff in combination with other on-site amenities. The lodge may consist of one building or many, and can include individual guest cabins or housekeeping units, trail systems, swimming beaches, boat docks, and other lake-related facilities.

While some of the amenities, such as tennis courts and swimming pools, can exist in isolation of natural environment values, the primary focus of main base lodges is to provide guests with access to outdoor recreational opportunities which are highly dependent upon natural resources. Guests pursue hunting, fishing, pleasure boating, waterskiing, photography, hiking, snowmobiling, cross country skiing and other activities within the land and water system, using the lodge as a comfortable base of operations.

Main base lodges consist of two basic types; fly-in and road accessible. The former are more remote, and usually cater to hunters and sport fisherman who are more serious about the quality of their experience, and are willing to pay a higher price to obtain it. Road accessible lodges may also provide high quality hunting and fishing, but usually cater more to family vacationers for whom the overall range of opportunities in one place is most important. Being road accessible, these operations are less remote, and involve lower transportation costs.

2.1.2 Outpost Camps

Outpost camps are normally accessible only by aircraft, and offer more rudimentary facilities to individuals or small groups, but in more remote settings. Accommodation consists of a cabin or cabins, with all cooking facilities and utensils being provided by the owner. Neither the owner nor any staff are present, unless a guide has been retained. Cooking and housekeeping are undertaken by the guests. The quality of hunting and/or sport fishing is vital to the success of outpost camps.

Outpost camps can be operated as single facilities, or as part of a network owned by a single tourist operator. In a network operation, guests have the opportunity of staying shorter intervals of time at a variety of different lakes, perhaps offering different big game, waterfowl, or sportfish species.

Outpost camps can also be operated in conjunction with main base lodges, whereby guests begin and end their stay at a full-service, staffed lodge, but spend their remaining time at various outpost camps provided by the lodge owner.

Aircraft services which transfer guests from major airports to fly-in lodges or outpost camps, or between tourist facilities, are usually provided by independent businesses. A number of lodge operators own their own aircraft, and many air services maintain their own networks of outpost camps.

2.1.3 Boat Caches

Boat caches are maintained by some tourist operators, for use by guests who fly in or portage to remote lakes. No accommodation or other facilities are provided, and the boats are used for short term periods.

2.1.4 Tourist Roads

Travelling for sightseeing and pleasure has always been one of the most popular tourism activities, either for its own sake or in combination with trips for other purposes. Roads which traverse natural resources can therefore provide important tourism opportunities. In the past, reserves have been employed to screen logging activities from the view of the travelling public, and as discussed earlier in this manual, are subject to replacement with modified operations similar in concept to those on lakeshores. Tourist roads, for purposes of this manual, include those primary and secondary roads maintained for multiple uses including public access, and having sufficient tourism values to warrant the identification of an "area of con

cern". Roads designed only for timber access, or occurring within Forest Management Agreement areas, are not included.

2.1.5 Public Access and Commercial Facilities

Access points are facilities provided by the Ministry of Natural Resources to permit public access to selected lakes. The facilities will usually include a launching ramp, and parking for cars and boat trailers. Pit toilets and waste receptacles are often provided. In addition to Ministry facilities, there are of course many commercial campgrounds and other resource-dependent recreational facilities which will also require protection.

2.1.6 Remoteness

The most important value enunciated by the tourist industry is

remoteness. Put very simply, the best accommodation, fishing, hunting, or other facilities and opportunities will not sustain the industry if the tourist's desire for a sense of isolation in undisturbed forests is not satisfied. True wilderness is a rare and specific thing, and most operators acknowledge that "pure" wilderness is not the issue. Indeed, the presence of a lodge or outpost camp in itself is at variance with the more philosophical definitions of wilderness.

Remoteness has a number of ingredients, including such elements as visual quality, isolation from other development, difficult access, and an exclusive kind of use for the guest who finally arrives.

Whether real or illusory, a given tourist lodge or outpost camp will either have it or not have it. If it doesn't, it will more than likely fail.

The perception of remoteness that exists can be variable depending on the type of tourist operation taking place. In general, the level of remoteness and demands for it will be greatest for outpost camps and boat caches, and lowest for road accessible base lodges.

The most important cause of reduced remoteness is the development of road access to lakes occupied by fly-in tourist operations.

2.1.7 Local Setting

The quality of the more immediate surroundings of tourist operations is also important. The tourist is seeking, and paying for, an enjoyable stay in which the actual facilities and immediate environment form a single package. Separation from other development (eg. cottages or other lodges) is of critical importance, as is natural scenery.

2.1.8 Asset Protection

Tourist lodges and outpost camps represent the investment of private capital in physical assets which are placed upon either private (patented) land, or on Crown land available from the Government of Ontario through land use permits (L.U.P's) or licenses of occupation (L.O.C's). Such opportunities are usually limited in size to the land area required for the actual physical facilities to be provided by the operator. As such, the tourist operator requires protection from both devaluation of market value and reductions in operating revenue which would result from incompatible uses or operations in the local setting of the leased land, and in the larger context of the natural resources upon which the operation depends.

2.2 The Forest Industry

Ontario's, and indeed Canada's, recognized importance in meeting world demand for wood products is dependent on the wise utilization of its forest resources. Increasing world demand is such that more intensive and efficient management techniques and reforestation measures are needed to preserve the place which wood exports play in Canada's economy.

Because Ontario's tree growth is so slow, the forest industry estimates that the area of productive forest under its operating respon-

sibility must be about 100 times as large as the actual area of harvest, in order to practice sustained yield. Each square kilometre of such productive forest represents a very significant market value in finished wood products.

The forest industry utilizes a variety of systems and techniques in harvesting trees. Because the methods employed are based upon silvicultural principles which should be recognized in understanding both normal and modified operations, they are outlined as follows

2.2.1 Clearcut Silvicultural System

The clearcut silvicultural system involves the harvest of all or most of the forest in one operation to provide the conditions necessary for the establishment and survival of a new forest crop by natural or artificial regeneration. This system is most commonly utilized in the Boreal Forest Region, where it is normally the only system used, and to a lesser extent, in the Great Lakes St. Lawrence Forest Region (see Figure 4).

The boreal forest consists of generally homogeneous, even-aged stands of intolerant coniferous and deciduous species, which have sustained extensive fires every 100 to 150 years since the last glaciation. Such stands are best managed utilizing the clearcut silvicultural system, which creates conditions similar to those caused by fire (although on a much smaller scale), permitting the establishment and growth of these species.

Clearcuts can be of various shapes and sizes. The most common is an irregular pattern, broken by topography, forest type, and immature age classes. Contiguous cuts are not usually larger than 150 hectares. Size may be reduced and a cutting pattern may be established to protect fragile sites or to retain a standing seed source for natural regeneration. Strip and block clearcuts are also applied in the clearcut silvicultural system. With each of these

patterns, the uncut strips or blocks are themselves clearcut after the successful establishment of regeneration on the strips or blocks which were clearcut in the first operation, usually about five to seven years later.

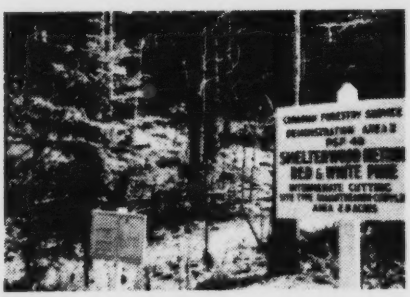
The clearcut silvicultural system, which usually involves site preparation to ensure regeneration success, and tending of the new forest crop, perpetuates or creates an even-aged forest. Approximately 85% of Ontario's annual harvest is produced under this system of timber management.

2.2.2 Shelterwood Silvicultural System

The shelterwood silvicultural system, like the clearcut silvicultural system, is an even-aged system of timber management in which harvest operations, site preparation, regeneration, and tending operations are carried out at different times. The primary difference between the two systems is the temporary retention from harvest, in the shelterwood silvicultural system, of trees which provide the seed source and cover conditions necessary for the successful germination and establishment of natural or artificial regeneration. After successful regeneration, the residual crop is removed in a single cut or series of cuts.

The shelterwood silvicultural system is most commonly applied in yellow birch and white pine forests on shallow till soils in the Great Lakes-St. Lawrence Forest Region. The system is also commonly prescribed for even-aged sugar maple forests. Approximately 5% of Ontario's annual harvest is produced under this system of timber management.

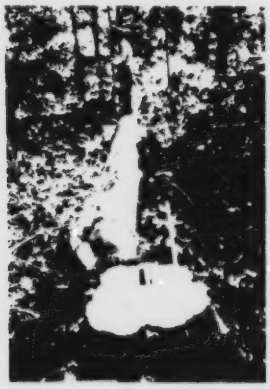
There are two forms of the shelterwood silvicultural system currently in use. The strip shelterwood system involves clearcutting strips 20-40 m in width. The adjoining alternate strips which remain provide the seed source for natural regeneration by wind dispersal of seed. The uniform shelterwood system involves cutting



uniformly over a whole stand, reducing stand density by approximately 60%, and leaving individual trees or small groups of trees uniformly dispersed over the cutting area as the seed source for natural regeneration. For each form of the system, the residual mature forest is removed in a second, and possibly a third, harvest operation 5-15 years later.

2.2.3 Selection Silvicultural System

The selection silvicultural system differs from the clearcut and shelterwood silvicultural systems by providing for the harvest of mature trees, the tending of immature trees, and the development of existing seedlings on the forest floor in one operation at the same time. This system is well suited only to tree species which are



readily able to establish on an unprepared seedbed, and which are shade tolerant and windfirm. Economics dictate that the tree species and trees involved be of relatively high value (e.g., sawlogs or veneer), since the costs of harvest operations must be spread over a lower yield per hectare. The system is most commonly used in uneven-aged hardwood forests of the Great Lakes-St. Lawrence Forest Region. Approximately 10% of Ontario's annual harvest is produced under this system of timber management.

Selected trees are carefully marked and then removed, either as individuals or in small groups, at repeated short intervals of time, usually 15-25 years. The trees selected for removal include mature trees, defective trees with poor growth potential, and immature trees in strong competition with other trees of great potential. Openings created during harvest operations fill in by the crown expansion of residual trees, or by the development of existing seedlings on the forest floor, or both. Tending and improvement operations are critical to the maintenance of crop quality and growing conditions.

The selection silvicultural system perpetuates an uneven-aged forest,

with trees of different ages growing singly or in small groups.

2.2.4 Logging Systems

There are three logging systems currently in use in Ontario. Some are wholly or partially mechanical (i.e., carried out by specialized machines or a group of machines), while others are wholly or partially manual, usually involving chainsaws and the conventional skidder.

The shortwood logging system supplies preferred log lengths at roadside for transportation. About 15% of the provincial annual harvest is undertaken using this system.

The tree length logging system provides tree lengths with limbs and tops removed, at roadside for transport as tree lengths or, upon further processing, as preferred log lengths. The limbs and tops are removed at the stand. Approximately 70% of Ontario's annual cut uses this logging system.

The full tree logging system supplies the entire tree, including branches and tops, at roadside for further processing into tree lengths or preferred log lengths prior to transport. The limbs and tops are removed at roadside by specialized equipment, and are usually burned. About 15% of the provincial annual harvest employs this method of cutting.

All three of the above logging systems are employed under the clearcut silvicultural system, with tree length logging being the most common. This logging system is also the most common in both the shelterwood and selection silvicultural systems, in which the shortwood logging system is also employed.

2.3 Collaboration of Both Industries

Before moving on to the **CONCEPTS and GUIDELINES** sections, the importance of collaboration between both industries cannot be overemphasized. While the process is mandatory, the rigid application of guidelines without collaboration is not.

It is the timber industry which is required to prepare the management plans referred to in this manual (with the exception of Crown Management Units, where MNR is responsible). The onus is therefore upon the timber manager to take into account the tourism values requiring consideration and protection.

The tourist industry is not required to prepare the plan. But there is a parallel responsibility to work with the timber industry, in defining values, advising on facility plans, and considering the most appropriate guidelines to employ.

This manual offers a starting point and needs to be continually tested and refined to remain useful. The best results will occur when representatives of the tourism and timber industries work together in identifying concerns, pooling knowledge, making choices, and devising additional solutions.

3.1 Preface

This section presents a number of principles which are common to many tourism values, or to the selection and application of the guidelines presented in the next chapter.

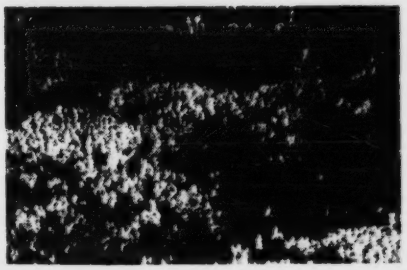
These principles include the components of visual quality, using reserves for maximum effect, and flexible performance versus fixed result specifications.

3.2 Visual Analysis and Aesthetics

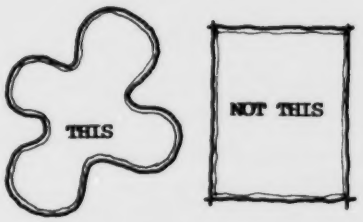
3.2.1 Functional Guidelines

Well managed forests that include factors of site protection, prevention of erosion and mechanical damage, wildlife values, and fast regeneration of cut over sites, look better than those ignoring such considerations.

The basic management objectives for aesthetics are often similar to those of optimum wildlife habitat:



- Diversity of forest types and vegetative cover.



- Maximization of forest edge.

- Optimum relationship between forest cover and forest openings.

Roads that fulfill the objectives of (a) driver safety, (b) response to site conditions through sensitive alignment, and (c) site protection of the right of way have greater aesthetic appeal than those that ignore such considerations.

The following principles, while by no means complete, are intended to provide a guideline to forest aesthetics. An appreciation of design criteria becomes important when the manipulation of the forest for visual reasons is a management objective.

3.2.2 Landscape Observation and Perception

The forest landscape is observed by people in a number of ways, all of which affect their perception of it.

Auto Travel

Motorists travel at high speeds along a predetermined ribbon. They are enclosed by the car and perceive the landscape as broad patterns and impressions. Detail has little or no importance. The road points the way like a finger and can dramatize or negate the visual qualities of the forest through which it passes. The motorist is concerned with the whole rather than the parts.

Foot Travel

People on foot travel at about 5 km/h. They are concerned less with the larger landscape than with small-scale experiences, with detail, and with the parts rather than the whole.

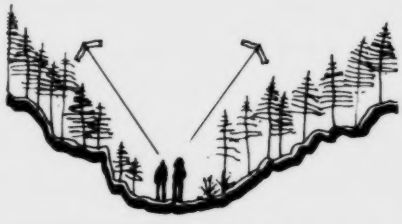
Boat Travel

Boaters and canoe-trippers are more perceptive than auto travellers, but less aware of detail than hikers or hunters.

The Observer

The relationship of observers with the forest landscape will determine what they see, and their response to it.

When standing at the bottom of a valley or enclosed on all sides, observers' views and distances will be restricted; emphasis tends to be on foreground interest and detail. Views will tend to be directed upward to the sky, or to distant objects at any upper level.



In flatter landscapes, distance and middleground assume greater importance and the larger landscape begins to have greater impact on the observer.

When the observer is at the summit of a hill or ridge (using a lodge operator's trail system, for example), maximum opportunities are present for distant views and orientation to the total landscape. The panoramic view offers drama and detachment from the immediate foreground. In relatively flat landscapes such as occur in much of Ontario, such heights are unique and important.

3.2.3 Landscape Characteristics

Landscape Form

This may include:

- topographic form derived from a dominant geomorphological feature, such as escarpment, drumlin, ridge, hill, island, or patterns of land and water.
- dominant vegetation form, such as a spruce bog.

Contrast

Where contrast occurs between one kind of form and another, interest is often heightened.

This can occur within the context of natural features,

or where man-made architectural forms contrast with natural ones,

or it can occur through the manipulation of openings in forest cover.

The important aspect of contrast is a harmonious relationship between the parts. Thus, while natural openings in the forest provide contrast with the forest cover, man-made openings should be designed to reduce to a minimum the contrast between the natural and the man-made.

Scale

All things seen have relationships with the human being, allowing comparisons of what is large or what is small.

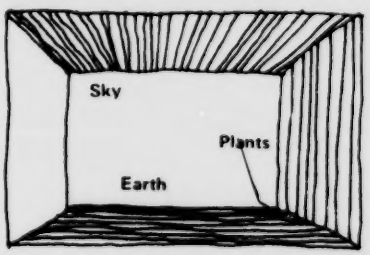
Vegetation, such as a tree, may provide a sense of scale to the landscape, since our experience leads us to recognize tree size in relation to our own size.
A large stretch of water without elements within it gives us no indication of its size.When objects such as boats, landscape forms, people, and trees are seen in relation to it, it provides a sense of its size, and its interest as a view is heightened.

Enclosure is increased or decreased in proportion to the height of the walls and dimension of the floor. The walls and floor can add or detract from the recognition of spaces.

Walls may be sheer rock,or steep wooded slopes.

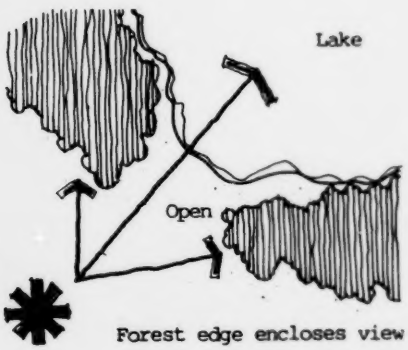
Spatial Definition

This refers to the three dimensional elements that enclose a space. In architectural terms, they consist of floor, walls, and ceiling. In natural terms, they can consist of a lake surface, steep shorelands, and sky.



Boundary edges may be continuous or interrupted.

They may allow or prevent outward views.



Forest edge encloses view

Floors may be a rock surface, ground plane, or water. Water bodies have a particularly commanding base plane which emphasizes their enclosing boundaries. The lake landscapes of Ontario are typical of these sharply defined spaces.

Sequence

This component consists of the progressive unfolding of views and landscape experiences. Visually, landscape is never static except from a fixed viewpoint. It changes continually as the observer moves.

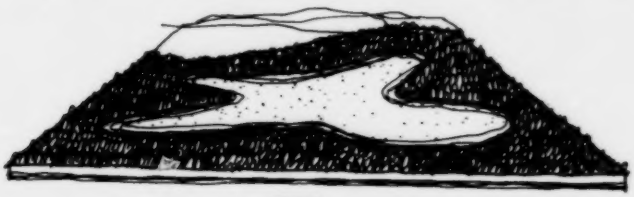
Sequence also involves the scale of movement. The number of contrasting events experienced when travelling at 100 km/h along a road may be more spread out and less detailed than those experienced when trolling on a lake.

3.2.4 Randomness vs. Rigid Geometry

Many tourism values are related to visual perceptions of, and desires for, a natural landscape. Because natural conditions rarely involve straight lines, the occurrence of highly geometric patterns created by logging operations emphasizes that significant changes have taken, place. Foresters agree that the complexities of every site, arising from combinations of terrain characteristics, soil depths and fertility, and stand types, create a natural randomness that needs no further "planning."

Despite the alterations resulting from harvesting operations, these random patterns are usually maintained with both the uniform shelterwood and selective silvicultural systems. In strip shelterwood or clearcut silvicultural systems, however, the patterns of harvest can often introduce a man-made geometry which is in direct contrast with the normal complexities of a site. The concept of maintaining random, irregular patterns is an important one, which will have impacts on tourist perceptions for many years during the regeneration cycle.

the case in practice, especially on inland sites. Unfortunately, the problem is more pronounced in the very areas of concern that it is most important to avoid, namely along lakeshores and public roads,



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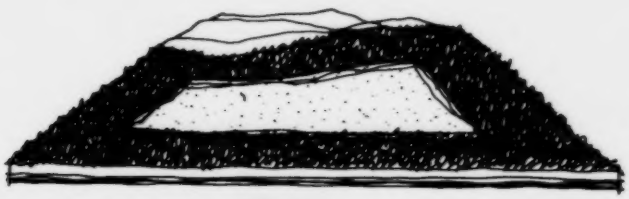


NOT THIS

In theory, clearcut operations should create such random patterns almost automatically, as the operator responds to terrain and stand type conditions. This is often and, ironically, seems to result from the desire to exercise more care.

In an attempt to show more sensitivity to tourism, the normal pattern of operations is often revised to produce block cuts or strip cuts along lakeshores and roads. The results often perpetuate public awareness of the timber industry's presence, by creating a geometric pattern which will last through many rotations until changed by a different choice of method, or by a natural event such as fire.

This manual provides a variety of possible solutions or approaches for the resource manager to choose from. A number of ways of refining strip and block cuts are therefore included, for those cases where they may be appropriate. However, in most cases the desired objective will warrant less geometric harvest patterns, and such cuts will not represent the best way of dealing with modified operations.

3.3 Appropriate Use of Reserves

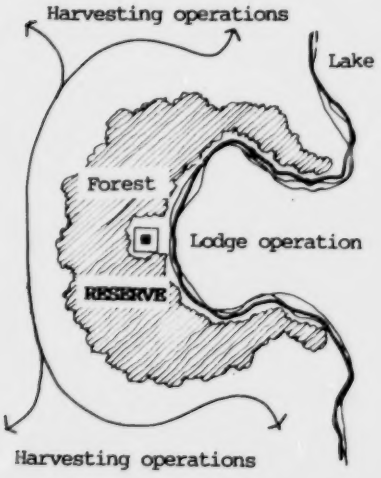
In Section 1.0, reserves were described as an alternative which will continue to be useful in protecting tourism values, although no longer the only option available.

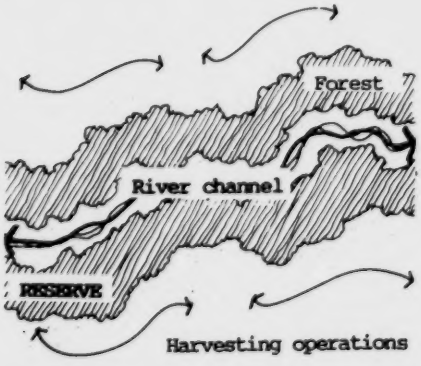
There will be cases where normal, or even the special provisions of modified harvest operations, cannot be conducted without causing unacceptable damage. The following criteria are suggested as situations where reserves may be the most appropriate option. They are not intended to be all-inclusive, as other situations may be encountered in which reserves are also appropriate. Nor are they intended to imply that every similar situation will warrant a reserve.

3.3.1 Reserves for Tourist Facilities

The actual location of tourist accommodation, whether it be a lodge, outpost camp, or campsite, involves a high level of expectation on the part of the visitor, and therefore requires a high level of protection. Whether the guest is paying for a special vacation or experience, or camping at minimal cost, the sense of remoteness will be of primary importance. In many cases, a reserve

will be the best option to ensure protection of such values. Each site will require careful thought as to its size and configuration, taking into account topography, site uses, and access (if by road).





3.3.2 Reserves for Navigable Channels

Many tourist operations involve the use of interconnected lakes. While the lakes themselves may be very large, the connections between them are often narrow channels or river systems. Such navigable stretches of water usually bring the lodge guest into close proximity with the surrounding landscape. In such cases, where the tourist use is particularly important to a tourist operation, or is otherwise heavily used, a reserve may represent the best means of protection. Such protection is largely visual and, like all reserves, should be sized to attain a specific objective.

3.3.3 Reserves for Tourist Roads

Certain lengths of publicly travelled highways have important tourism values, in that they provide particularly interesting and varied driving experiences. There will be areas where reserves are required to provide buffers between the tourist and major logging operations. Such locations are expected to be in the minority, as most protection can be provided by modified harvest methods rather than outright reserves.

The reserves discussed in this section bear little resemblance to

the traditional fixed-width reserves employed to date. Such approaches have produced monotony more often than interesting driving experiences.

In those cases where reserves along public highways are required, the reserve width should be determined by the topography and sightlines into the cut areas instead of by an arbitrary measurement imposed on the landscape. Also, the pattern of blowing and drifting snow should be taken into consideration (consult the Ministry of Transportation and Communications), as reserves can have important safety benefits.

3.3.4 Reserves for Prominent Scenery

The lakes used by the tourist industry vary widely in their shoreland configuration, and this is often the case within a single lake. Each lake used by a tourist operator as the basis for a lodge or outpost camp operation will have features that are much more important than others. Such features may be prominent landscapes as seen from the site of accommodation, or may be elsewhere along important travel routes to fishing sites or shore lunch spots. Features such as islands, long promontories, special skylines, cliffs, etc. may be such that even modified harvest operations cannot provide adequate protection. These may be legitimate cases where reserves can serve a worthwhile purpose.

3.3.5 Reserves for Fish and Wildlife

Remember, there are other guidelines covering moose habitat and fisheries values that may require the establishment of a reserve. The pattern which such reserves create should be recognized in evaluating the other protection efforts described in this manual.

3.4 Defining Reserve Boundaries

One aspect of the old reserve systems which should be avoided is the matter of standard widths or depths. Each effort to protect a value should be based on an objective, and it is difficult to imagine any objective which is best satisfied by a reserve of constant dimensions.

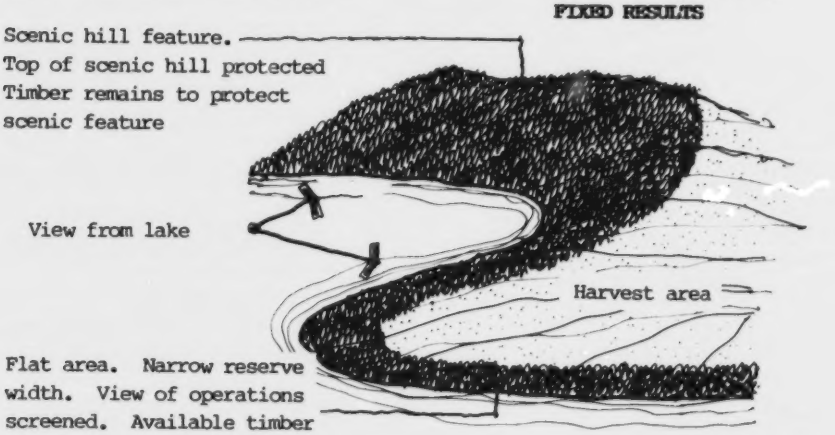
If the objective is to visually screen a harvest operation from tourists, there will likely be locations where a narrow width of standing timber is more than adequate, and others where a wide but fixed dimension strip is inadequate. The newer concept of variation with flexibility therefore requires some very careful thought if it is going to be implemented successfully. The only way of achieving this is to discard not only the old idea of fixed standard dimensions, but also the idea of measuring compliance by technical criteria.

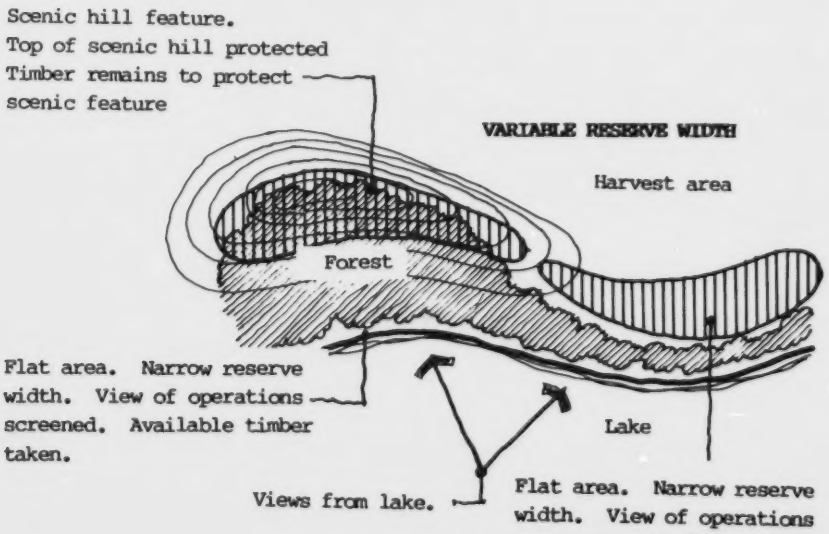
"Management by objectives" is a contemporary catch phrase in business, but has had relevant counterparts for a long time in both environmental legislation and the construction industry. Such legislation often deals with water quality standards which, for example, measure results. In the construction industry, it is sometimes more advantageous to specify the results required, rather than the technical materials and dimensions to be employed.

For example, a marina contract could state the use of wood decking, aluminum flotation chambers, and sizes and materials for all connections. The designer determines not only what characteristics the end product must achieve, but also how the contractor is going to have to construct it. This approach, which is the most common in construction, does have a problem, in that better, more efficient ways of construction are disallowed. In the marina example, a company capable of building the flotation chambers out of foam-injected concrete or some other material cannot tender on the job.

THIS VARIABLE RESERVE WIDTH

VARIABLE DIMENSIONS/
FIXED RESULTS





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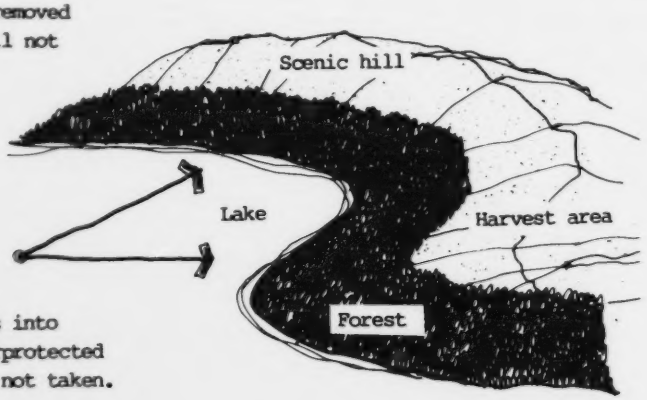
STANDARD RESERVE WIDTH

Too much timber removed
Top of scenic hill not protected.

Views from lake

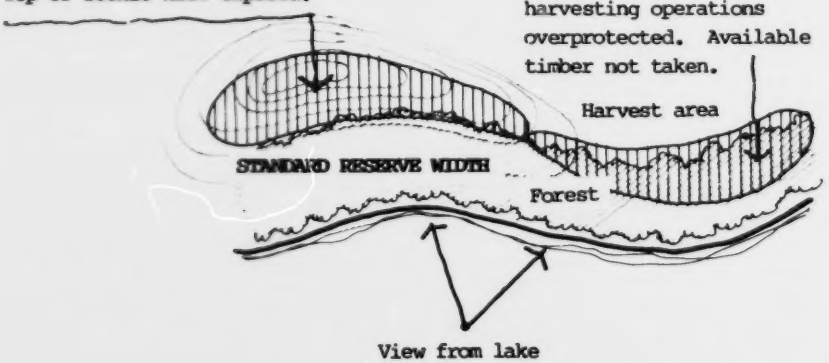
Flat area. Views into harvest area overprotected
Available timber not taken.

FIXED DIMENSIONS/VARIABLE RESULTS



Too much timber removed.
Top of scenic hill exposed.

Flat area. Views into harvesting operations overprotected. Available timber not taken.



Performance specifications address this problem by limiting the use of specifications to defining the desired results. Durability, freeboard, resistance to wave forces, etc. are all measurements of performance. Naturally, there are now a number of ways of building the marina, and the tenders will be more diverse in showing the different ways, and associated costs, of building a marina of an acceptable overall quality.

The principle of measuring performance against a stated objective is very relevant in using reserves, or other options such as access measures or modified operations. This manual assumes such an approach, and only a few of the guidelines contain rigid numerical criteria.

In summary, fixed dimensions usually produce variable results. Variable dimensions, resulting from more thoughtful evaluation, can produce a fixed result which is the desired objective.

3.5 Accelerated Regeneration

Regeneration of harvested areas is a requirement for all timber operations in Ontario, and the timing of such regeneration is normally based on silvicultural practices. Regeneration activities often require the maintenance of tertiary roads for continued access during scarification, seeding or planting, and tending activities. Delayed regeneration therefore can create consequences of delayed access control as well as delayed restoration of visual quality and other impacts.

There is some flexibility within silvicultural limitations, however, and as a general principle, areas of concern established for the protection of tourism values require regeneration activities to occur as quickly as possible following harvest.

One of the key factors in the regeneration cycle is the need to delay scarification until slash is brittle enough to be broken down by scarification equipment. Thus, the actual regeneration effort often commences a year or more after the harvest.

Where immediate regeneration is important to a tourist operation, every effort should be made to initiate seeding or planting as soon as possible. In the case of the full tree logging system, for example, which includes the removal and burning of slash at roadside, there is no need to delay scarification.

4.1 General

This section will deal with the methods available to control public access in areas of concern, for those cases where a consensus has been reached that such controls are necessary to protect the tourism values involved.

The Minister of Natural Resources may approve the creation of an official public access point on a lake under certain conditions, where:

- such an access point fulfills Ministry recreational planning objectives;
- there will be no effect on a tourist operation in the area (including those elsewhere on a large lake).
- control of the access point can be maintained.

The concern in this section is to protect existing tourist operators who cannot maintain a viable business on lakes which become accessible to the general public after the operators have made their investments. Lakes identified for future tourist operations may also require access controls to protect the resources upon which tourism will depend.

Environmental impacts and road planning procedures are dealt with in considerable detail in the Class Environmental Assessment, and will not be covered in this section. However, the best means of preventing conflicts between the industries is through such road planning. Regulations, closures and other remedial actions are useful, but less effective.

4.1.1 Primary and Secondary Roads

The closure of an area to public access can be handled in a variety of ways. Where such closure involves an extensive area, or a lengthy network of secondary roads, physical obstructions as discussed later in this section will not usually be the most effective means of control. In such cases, closure as a Ministry policy decision, under the Public Lands Act can be the best option. Such closure requires proper public notice and on-site signage.

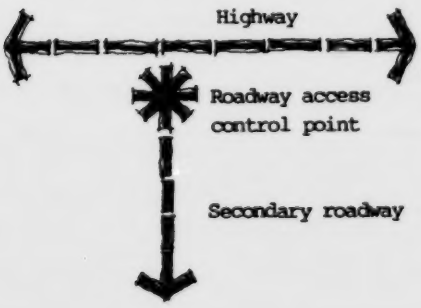
Signage should occur at all points of possible vehicular entry to the controlled area, from either primary or secondary roads as required.

Vehicular entrance signage

To reinforce the control of access, gates may be employed in conjunction with signage. Such gates should wherever possible be placed in highly visible locations at the perimeter of the controlled area.

Placing gates long distances in from an initial public road entry point leads to greater public frustration and increases the likelihood of vandalism.

Roadway closure location



4.1.2 Tertiary Roads

Tertiary road controls can involve either barrier measures, or road removal following harvesting operations. In some case, where the regeneration of abandoned roads requires initial protection, both measures can be employed.

Tertiary roads are usually planned to avoid long skidding distances. Excessive skidder trail lengths create more difficult operations.

In some cases, tertiary road locations close to a lake will be unavoidable and permissible. In such cases, no road or access development beyond that necessary for the removal of timber should be created. Unofficial, random public access points, however accidental, are not permissible in Areas of Concern.

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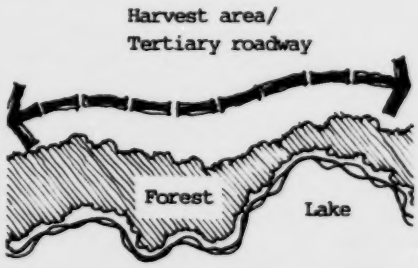

Restricted access to lake

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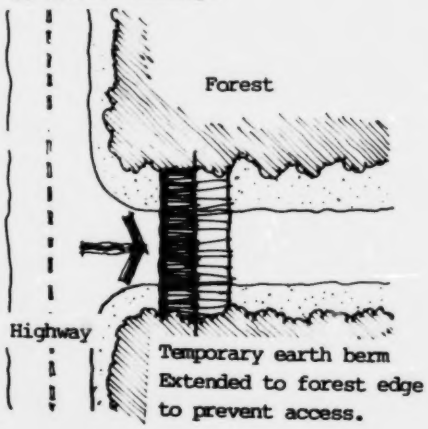
Avoid creating access points to water.

4.1.3 Road Closure

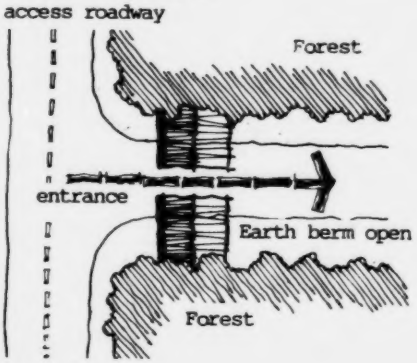
When operations are halted for a period of time, or on completion of harvesting and regeneration activities, all tertiary roads in Areas of Concern should be closed to public access.

STEP 1. Temporary closure of access roadway.



Earth berming may be used to block roadway entrances. Portions of the berm may be removed for renewed access by the operator when harvesting resumes. Berms should be shorter in cross-section than the wheel base of recreational vehicles.

STEP 2. Opening of access roadway



Alternative temporary control systems include ditching, boulder or log placement, and gating.

4.1.4 Road Removal

When secondary and tertiary roads are closed on completion of harvesting operations, the following program is recommended.

- Remove all salvageable culverts (if economically justified, and provided that fish habitat will not be adversely affected).

- Remove all temporary bridges, oil drums, and other remnants of the operation.

- In areas of good soil conditions, scarify the roadbed to eliminate soil compaction and to allow for natural regeneration (not necessarily merchantable timber).

- Protect regenerating areas from vehicular encroachment until vegetation is established.

4.2 Cutting Patterns

This section deals with a variety of techniques by which timber removal can be accomplished with the least visual impact on tourist values. If the cutting areas will not be in view, or if viewing is considered to be acceptable, then most of this section is not likely to be applicable.

The application of the techniques presented here to a given Area of Concern assumes that a reserve will not be necessary, and that a normal harvest will not provide adequate protection.

In dealing with patterns, this section also assumes that other aspects of the proposed cut, such as access road planning and controls, distances from lakeshores, etc. have already been determined in accordance with Sections 1, 2, and 3 of this manual.

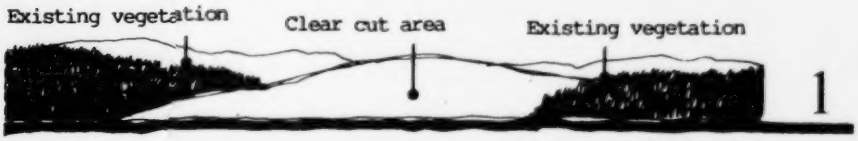
A modified operation is not entirely different from one that would normally have occurred. Basic silvicultural principles still apply, and the clearcut methods required in a boreal forest type, for example, cannot be "modified" into a selective cut method.

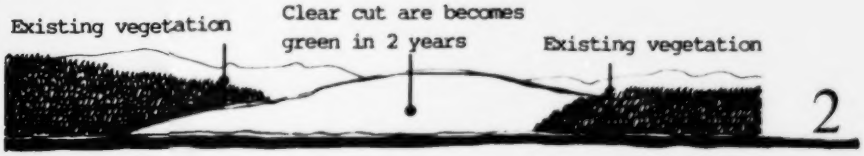
Therefore, the techniques for modification are presented within the headings of each silvicultural system.

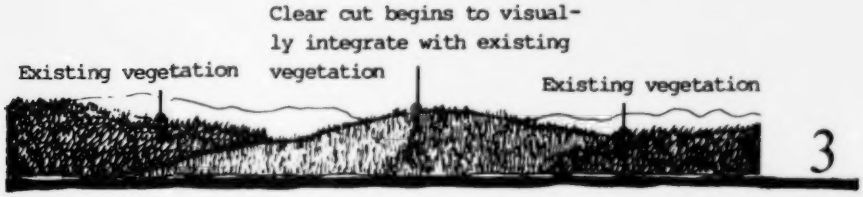
4.2.1 Modified Clearcuts

Clearcuts on the shoreline may be visually acceptable, and preferable to other methods which require much more protracted logging activity. Block, strip and patch cuts may have less initial visual impact than a clearcut, but they also extend the length of time it takes to remove the timber, because of the necessity of making return cuts.

Some tourist operators may prefer to have a greater initial impact in return for a shorter duration of logging activity near their facilities. In such cases, special care should be taken in planning a lakeshore clearcut, and in ensuring the fastest possible regeneration. The advantage to the tourist operator will be most apparent after five to seven years of regeneration, when slope vegetation has been re-established. The clearcutting of lakeshores in Areas of Concern should first consider the Guidelines for the Protection of Fish Habitat. If

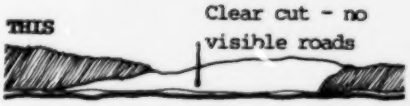


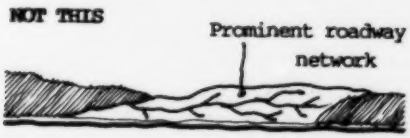




lakeshore cutting remains a possibility, then the following guidelines should be considered. Such clearcuts:

- should not reveal any secondary or tertiary roads.





- should leave residual trees in groups, rather than as isolated individual trees.

THIS

Groups of windfirm trees

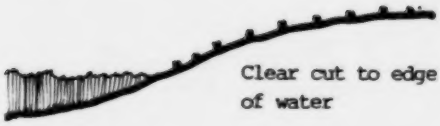
NOT THIS

Individual trees remaining

Cut area

Between existing trees

THIS



Clear cut to edge of water

NOT THIS

Avoid allowing debris into lake

- should accomplish tree removal along the shoreline without allowing debris into the lake, or damage to the banks.

- will require special efforts, if necessary, to ensure that site preparation and seeding or planting of the area following harvesting operations is both immediate and successful.

- should try to be defined on the basis of the broad landform configuration involved, without rigid lines.

- are not suitable on steep slopes where erosion is likely.

THIS

Clear cut following the landform configuration.

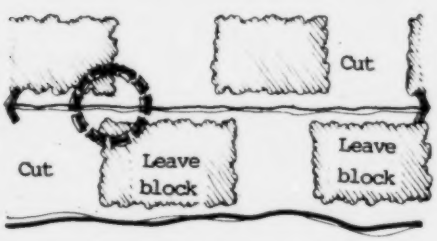
NOT THIS

Avoid clear cut patterns that conflict with the landform.

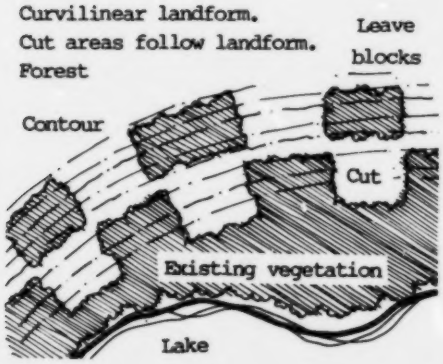
4.2.2 Modified Block Cuts

Overlap block cuts to reduce views of harvesting operations, as well as blowdown occurrences

Overlap of leave blocks



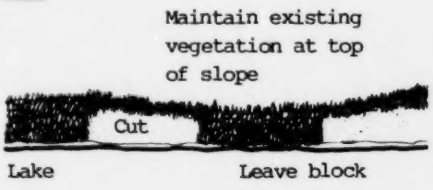
Curvilinear landform.
Cut areas follow landform.
Forest



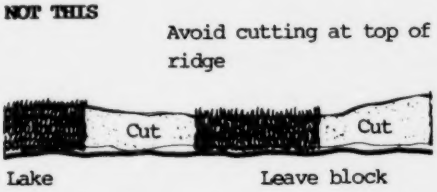
The block may be curvilinear in form. In some locations it may be possible to run the block cuts parallel to the contours, to produce a more natural effect.

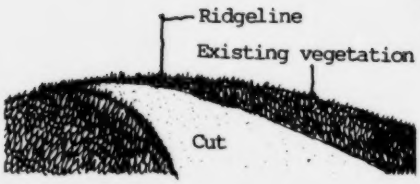
Avoid vertical block cut patterns on hilltops, where the ridgeline will be in prominent view of lake users.

THIS



NOT THIS

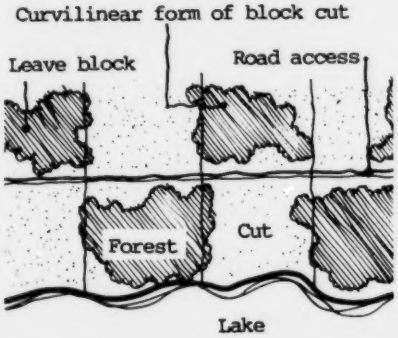




Angle cuts at ridgeline

Or, crossing a ridgeline at an angle to the common position of an observer is acceptable.

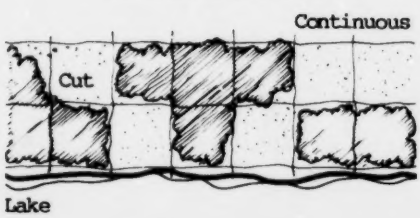
Curvilinear form of block cut



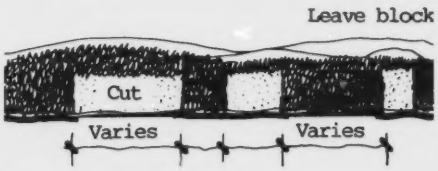
Block cuts may be altered to appear more curvilinear/natural in form.

Portions of the block cut may be joined to produce a more natural-looking continuity.

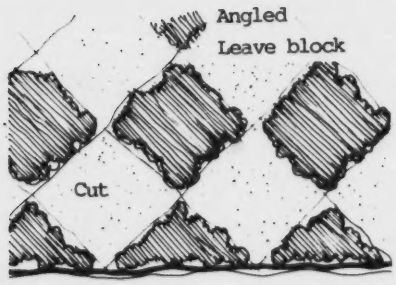
Continuous leave block



The width of the pattern may be varied to produce greater landscape diversity.

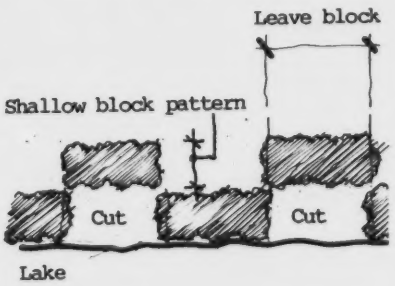


Vary cut and leave block widths



Block cuts may be arranged to intersect the shoreline at an angle. This pattern, in avoiding perpendicular cut lines to the shore, can reduce views from the lake into the cut area.

The block pattern may vary in depth as well as in width to allow for a narrow shoreline stand.

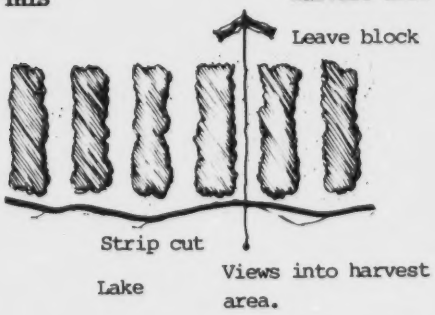


If wind-firm, individual trees can be retained at the edges of the cut area to soften the transition between residual blocks and the cut area.

4.2.3 Modified Strip Cuts

In most cases, strip cuts should not run perpendicular to the shoreline, but should align with the contours, or in flat terrain should be angled to reduce potential views into the harvesting operation.

NOT THIS



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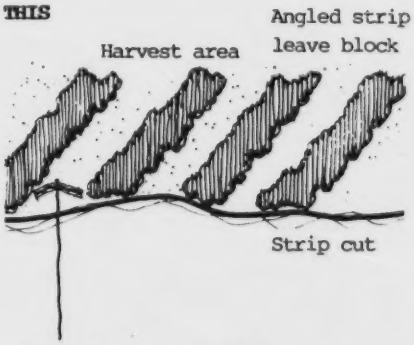
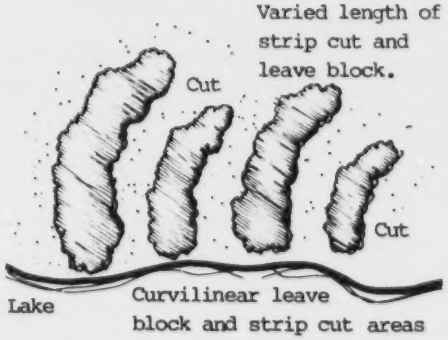
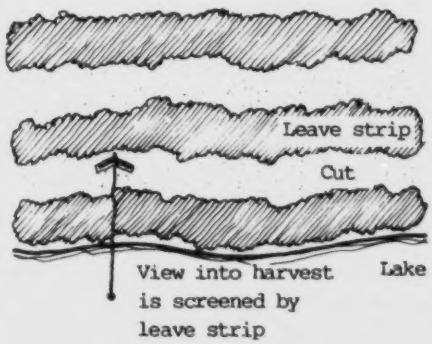


Where individual strips will be visible, variation of strip width (within silvicultural and operational limits) can provide a more natural appearance.

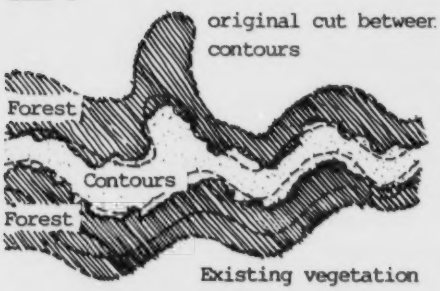
Vary length of cut, or employ curvilinear edges.



Strip cuts parallel to contours on a lake shore can be an effective method of disguising an operation. If the widths are carefully planned in relation to slope angle, they allow removal of timber while preserving the visual character of the slope. This technique, while less effective on the return cut (when regeneration is not as tall,) still has merit over geometrical block cuts because it avoids vertical cut lines.



STEP 1

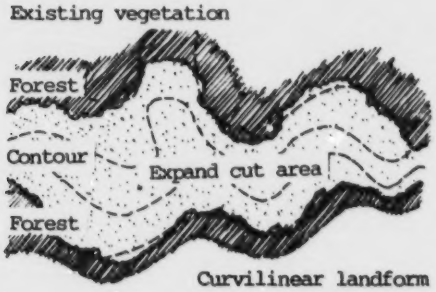


Curvilinear landform

The strip cut pattern can be used as the basis for the development of a more natural cutting pattern. The initial cut can be confined to an area well within two contours, and then can be expanded to form a more irregular-shaped opening.

STEP 2

Existing vegetation

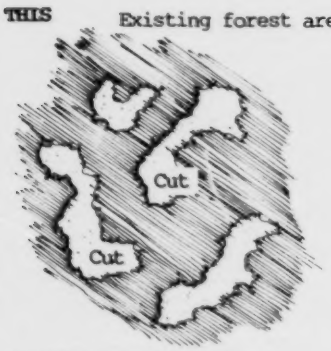


4.2.4 Patch and Chevron Cuts

Patch and chevron cuts are variations of the above cutting methods.

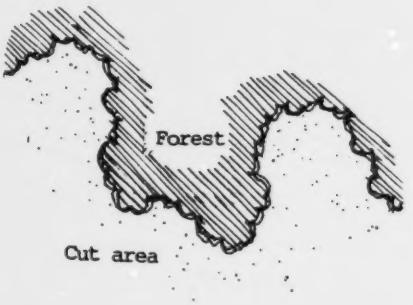
Patch cuts may be modified to create a more natural harvested area form.

Natural form patch cut



Continuous patch cuts form a more natural harvest area

Patch cuts can be connected to help produce continuity of open and closed spaces.



The limits of the patch cut may follow tree stand types, which will usually produce random cut area forms.

The individual size of several patch cuts can be varied so as to avoid an artificially imposed pattern on the landscape.

NOT THIS

Same size cuts established Unnatural pattern

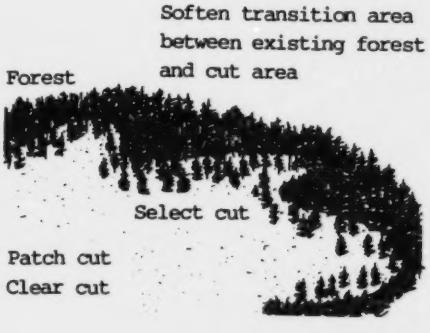
Cut

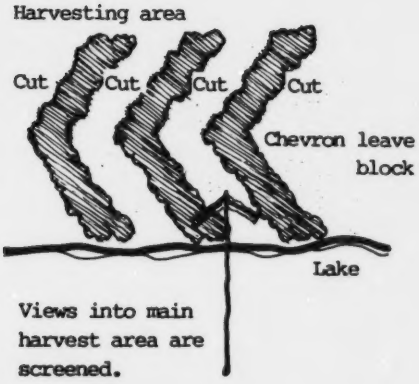
THIS

Vary sizes of cut patches

Cut

When feasible, the patch cut system will appear more natural if the edge condition is softened by leaving a thinned or selectively cut area along the edge of the cut.



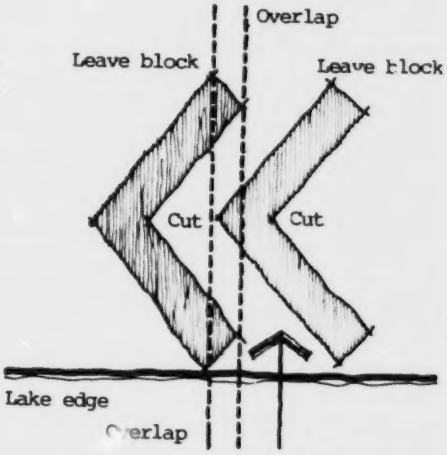


Views into main harvest area are screened.

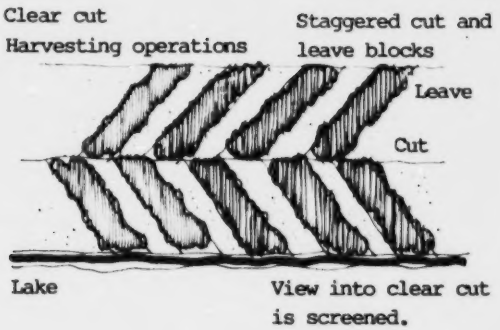
Chevron patterns can minimize the view into harvest operations. Many of the principles suggested for block or strip cuts can also apply here.

Vary widths of chevron pattern.

Ensure overlap to buffer views into site.



Chevron and block cuts can also be combined by staggering cut and leave blocks.



4.3 Noise Control

4.3.1 The Problem

Noise, as a result of logging activity resists the type of guidelines that are applicable to visual impacts for a number of reasons. first, noise itself is not predictable. Noise generation will vary with the type of equipment being used, and the physical terrain conditions in which logging activity takes place. It can also vary with local weather conditions. Noise impacts, and their degree of acceptability can also vary, depending upon such factors as the size of the area of concern, and the season of year.

One operation close to a lodge or outpost camp can produce lower impacts than another occurring at a greater distance away. The problem for the tourist industry can be divided into minimum and maximum protection efforts. As a minimum, the tourist requires protection at the place of accommodation, where sleeping, dining, and shore-based recreation take place, and along major tourist water corridors. These areas of use require the greatest care on the part of the forest manager in planning harvest activity. Of lesser importance is the reduction of noise levels for tourists out on a lake away from the lodge. A higher level of noise will generally be more tolerable here than at the lodge.

4.3.2 The Approach

The guidelines do not attempt to predict the influences of terrain, weather, and other factors on the likely level of noise which a particular harvest operation will have on a tourist operation. Instead, emphasis is placed on the avoidance of unacceptable noise levels at the tourist user location, as follows:

As a general guideline:

- operations, including hauling, should be avoided within hearing distance of a lodge, outpost camp, campground, or major tourist water corridor, between 6:00 p.m. and 6:00 a.m. from May through October.

- all equipment used for harvesting, road building, and transportation within areas of concern should operate below 90 dbA.

More or less stringent guidelines may be developed with the collaboration of both industries for specific sites.

4.4 Regeneration

4.4.1 General

In Section 3.0, emphasis was placed on accelerating regeneration in areas having high priorities for the protection of tourism values. In this section, broader guidelines dealing with specific aspects of regeneration are provided to minimize visual impacts on areas requiring the protection of tourism values.

4.4.2 Sequencing and Timing

Various stages of regeneration will provide visual interest along a highway corridor, as well as a higher level of public understanding of this important aspect of timber management

Sequential regeneration, as an interpretive technique, should attempt to follow contour intervals and thereby integrate with the topography, or follow highway alignment to reinforce driver sightlines.

THIS Transition area
Area allowed to regenerate natural transition between roadway and new forest area.

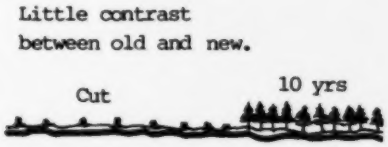
NOT THIS Hard edge - poor transition between highway and new forest

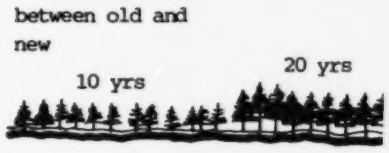
To provide a more natural transition between highway clearing and forested area, regeneration can occur at the edge of the right of way. This regenerated edge can be started when the highway is being constructed, or can occur along existing highways.

Harvesting adjacent to immature stands will, in subsequent years, produce a more immediate integration of the harvested area with the existing forest.

NOT THIS

THIS



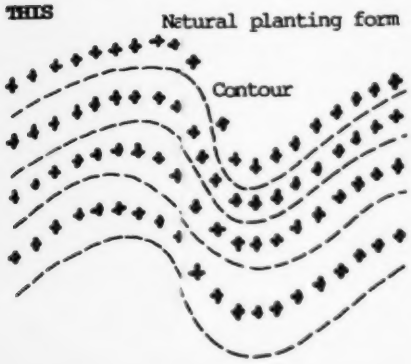


4.4.3 Form

Avoid planting trees in straight rows, as this creates or perpetuates a man-made form

- follow contours to emphasize topography.

THIS



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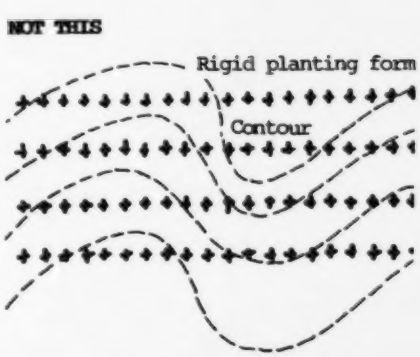
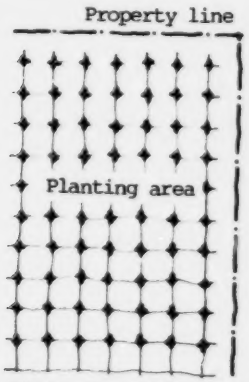


- follow soil type limits to reflect growth requirements of different species.

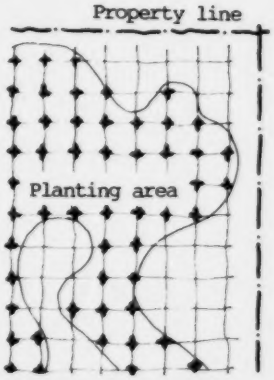
Avoid creating straight edges in newly planted areas. Avoid planting completely to property edges as this imposes unnatural lines on the landscape and is therefore visually artificial.

NOT THIS



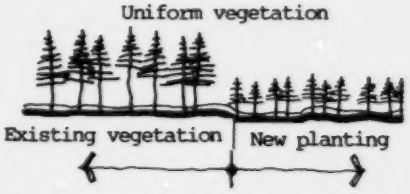
Rigid edge. Unnatural.

THIS

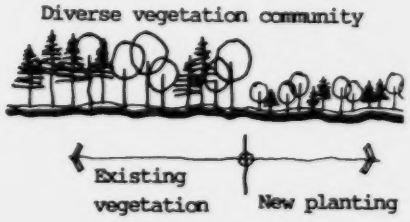


Natural edge condition

THIS



OR THIS

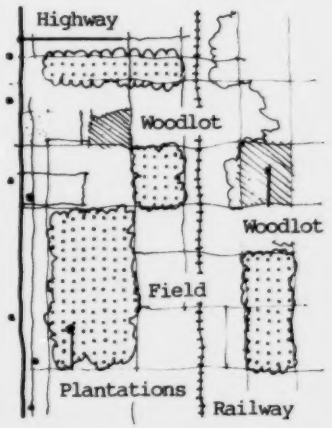


Where a uniform vegetation community exists, new plantations as well should be uniform in species.

Where a diverse vegetation community exists, new plantations should reflect that diversity.

Cutting and planting layouts should attempt to reflect the patterns of the surrounding landscape.

In the south, and a few areas of Northern Ontario, where agriculture occurs, the landscape often reflects a grid pattern of positive and negative forms, e.g., fields and woodlots. In these areas new plantations can have rectilinear forms which reflect the landscape character.



4.4.4 Prescribed Burns

Once an area has been harvested, Prescribed Fire is one method that may be used to prepare the site for artificial or natural regeneration of the forest.

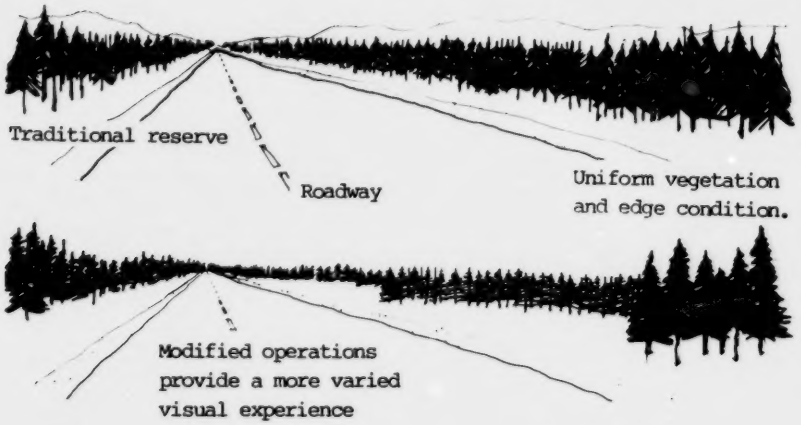
Prescribed burns may be conducted near lakes where tourist operators are resident, after the operator's concerns have been identified and responded to.

Prescribed burns may be conducted in areas visible by the public (i.e. crests of hills, lakeshores, highway corridors, etc.), providing the public is kept advised and well informed as to the reasons for and benefits of all such burns.

4.5 Scenic Enhancement of Roads

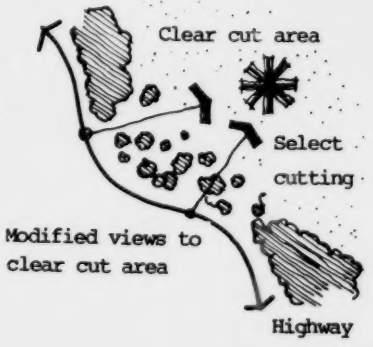
Many highways in Northern Ontario pass through lengthy stretches of forested areas. These routes, usually lined with traditional reserves, often provide a visual corridor effect that is both monotonous and a contributor to driver fatigue. The lakes, wetlands and other terrain features anticipated by the general tourist are there, but often go unseen for long distances.

In most cases, modified operations will produce more varied and acceptable driving experiences, than the traditional application of fixed-width reserves.

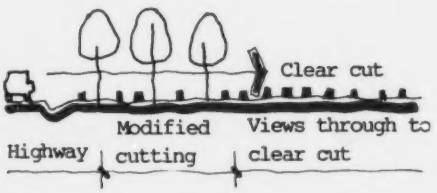


4.5.1 Logging Existing Reserves

Combinations of either shelterwood or select cutting methods with clearcutting behind are possible, and can occur right across a road.



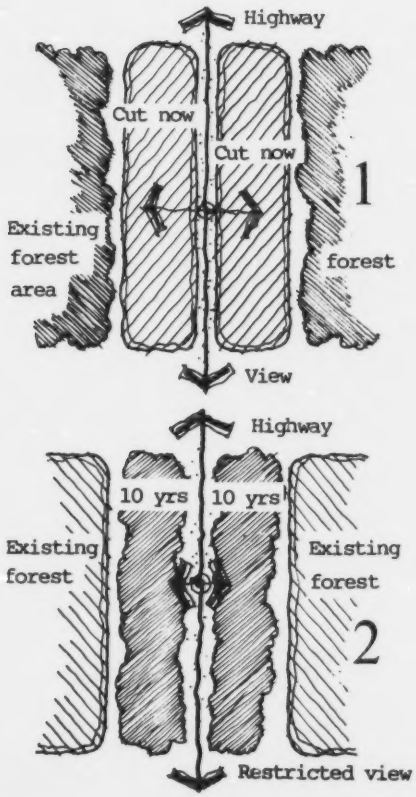
The shelterwood or select system will produce variation, while at the same time filtering views into a clearcut area.



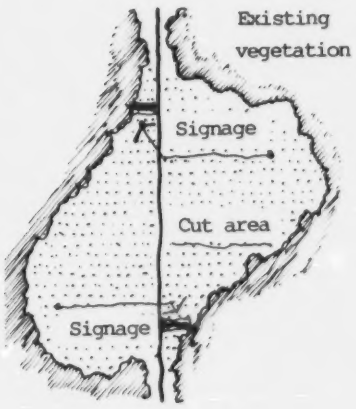
Clearcutting in large areas can be utilized by sequencing the cutting operations. Existing reserve areas adjacent to the highway can be cut initially, and clearcutting can then occur behind the reserve areas following regeneration.

The initial cut may appear as a wide highway right of way, but this effect will change with regeneration.

Clearcutting one side at a time, allowing for regeneration in between, is another way of sequencing initial visual impacts.



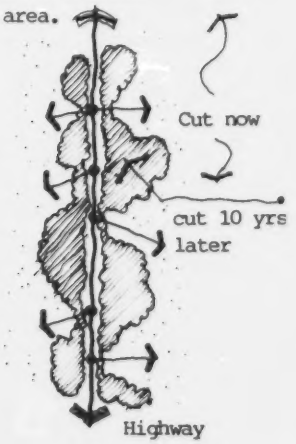
Finally, there is nothing wrong with clearcutting across a road. In such cases, some transition in scale at the entry points, and perhaps interpretive signage, is desirable.



Roadside cuts should attempt to be curvilinear in form, reflecting terrain conditions and stand types. Even on flat terrain, however, cutting patterns should avoid straight lines parallel to the centreline.

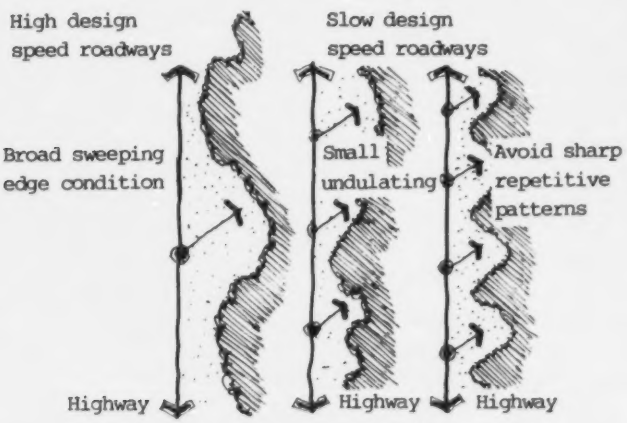
It may be desirable to allow some selected views through the regenerating buffers into a major harvesting operation.

Views into clear cut area.

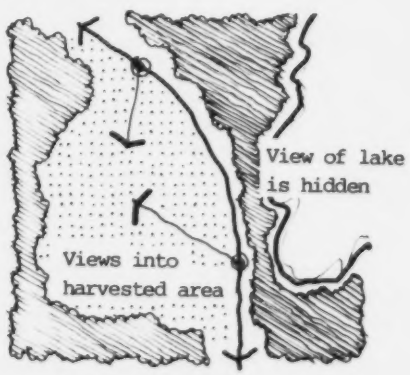


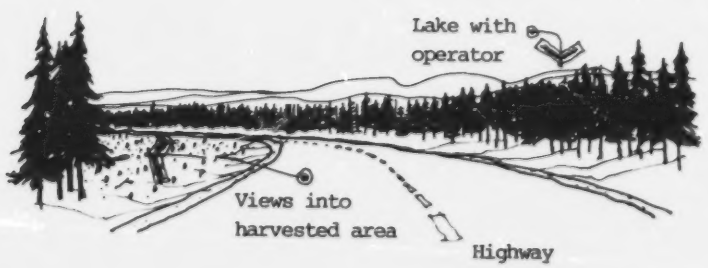
4.5.2 Views

Broad, sweeping edge conditions will be more successful. Slow design speed roads will gain greater benefit from smaller, undulating vegetation edges.



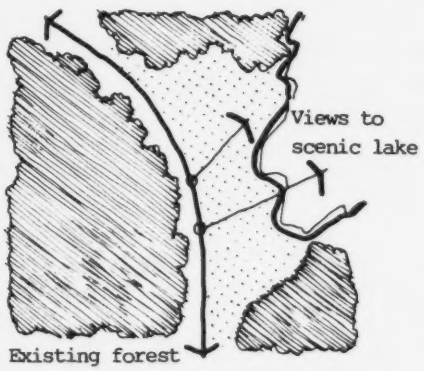
Harvesting operations along roads can be located to help protect remote lakes or other special features, by deflecting attention away from the lake.

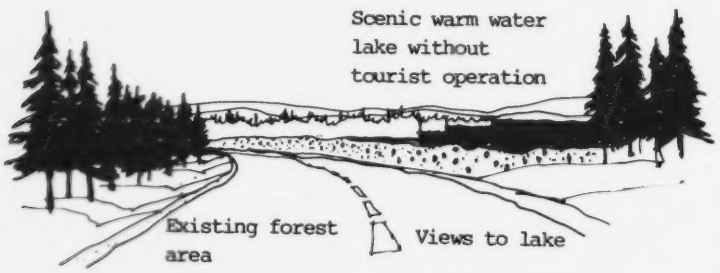




In other cases, scenic features can be exposed to public view by appropriate cutting operations, when the features and views will not be affected adversely.

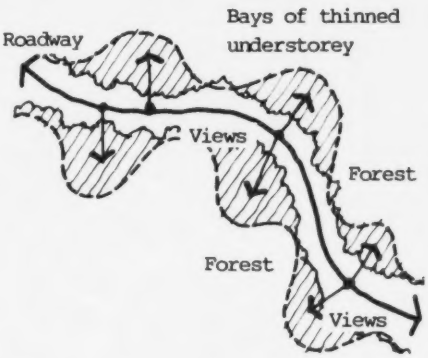
In other cases, scenic features need only be partially exposed by partial thinning of a forested area. This technique will be especially effective in shelterwood silvicultural systems.

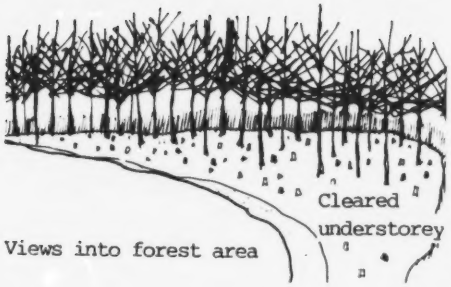




Cutting operations may expose wetland areas, which provide a varied visual experience.

All trees do not require removal for vista clearings and lookouts. Select cutting systems may be appropriate.





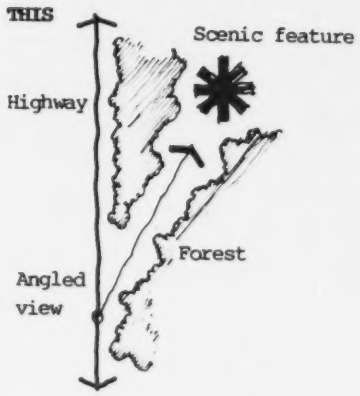
Superb scenic features are not needed to create interest. In flat terrain, the possibility of interior views into the forest understorey can be considered.

Maintain ground vegetation on steep slope situations following vista clearing operations, to minimize erosion and assist in regeneration (see also "Construction and Mitigation Handbook for MNR Class EA Projects.")

Vista clearings should not be placed in areas where they will introduce distractions and be hazardous to safe operation of vehicles.

Vistas perpendicular to the centreline, especially on the outside of curves, are especially distracting.

Angled vistas, which are more consistent with the driver's view down the centreline of the road, are safer.



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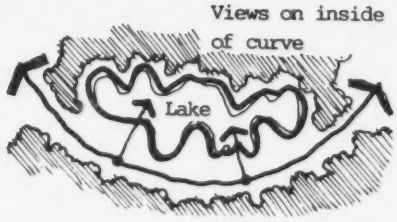
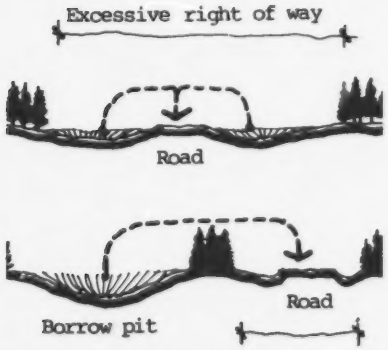


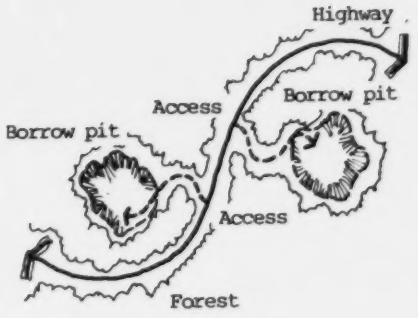
Long, sustained vistas are safest on inside curves.



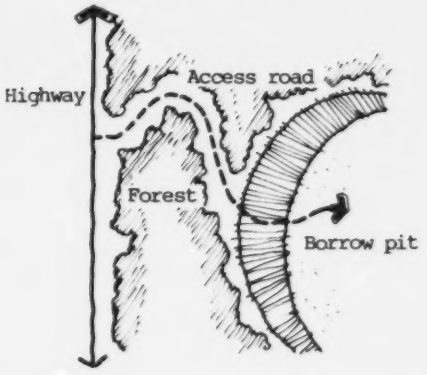
4.5.3 Reducing Borrow Pit Impacts

Reliance on right of way gravel sources usually results in right of way clearing, which is avoidable if borrow pits are used as centralized sources of material.

Bend roadways to avoid views into borrow pits. Borrow pits can be located on inside curves where they are less visible.



Maintain existing vegetation between roadway and borrow pits.



4.6 Recreation

The following guidelines apply, not necessarily to the entire Area of Concern, but to those locations within the A.O.C.identified by the tourist operator as the important areas of recreational opportunities used by guests.

4.6.1 Hunting Areas

Modified cutting methods may be required where hunting is a major component of a tourist lodge.

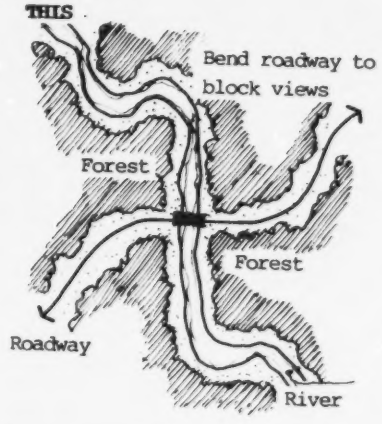
Patch cuts or curvilinear forms of the block cut pattern can be used in hunting areas. Selective thinning of edge conditions of the harvested area will help to enhance the natural character of the space. Selective thinning of the entire patch area may also be utilized.

Habitat enhancement efforts should reflect wildlife guidelines published separately from this manual.

4.6.2 Canoe Routes

In planning timber access roads, the selection of river crossings should avoid long straight sections where the road may remain in view of canoeists for long periods.

Place crossings on shorter tangents between river bends. Such locations will be visible to canoeists for the least amount of time, and will offer stable bank conditions.



Select crossings having good tree stands which are suitable for reducing the visual impact of bridge approaches and footings. Without reducing appropriate driver sight distance, keep the length of the crossing, including approaches, as short as possible as seen by the canoe tripper.

Examine alternatives to crossing in the vicinity of rapids. Such areas are often the locations of highest recreational use, as well as portages, campsites, and archaeological values.

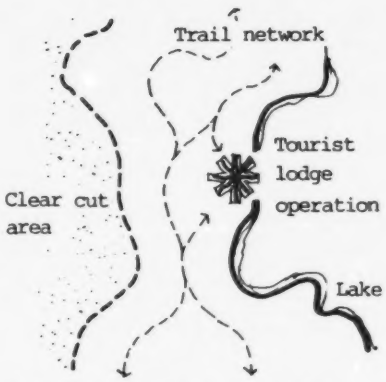
Where feasible, utilize winter crossings on ice instead of year round bridges. Angle such crossings downstream, so as to minimize visual impacts of clearings on warm-weather recreationists.

4.6.3 Trails

New trail systems should not be planned by the tourist operator without collaboration with those responsible for planning current and future timber operations in the area. Avoiding conflicts is usually cheaper and more effective than taking remedial action.

Where major hiking, cross-country skiing, or jogging trails constructed by tourist operators for guest use already exist, and would involve considerable replacement efforts, attempt to avoid large clearcut operations in the vicinity of the system.

Where direct contact cannot be avoided, modify operations to eliminate or minimize road construction across or near trails, and develop harvest patterns having less visual impact on the trail users (see also Section 3.3).



4.7 Interpretation/ Demonstration

4.7.1 Objectives

The objectives of interpretive programs can include:

- demonstration to the public of the work and activities of the Ministry of Natural Resources and the forest products companies in Ontario forests;
- demonstration of the success and failure in any program;
- showing the relationships among commercial timber operations, recreation, and wildlife management;
- showing the social benefits that accrue from wise management policies.

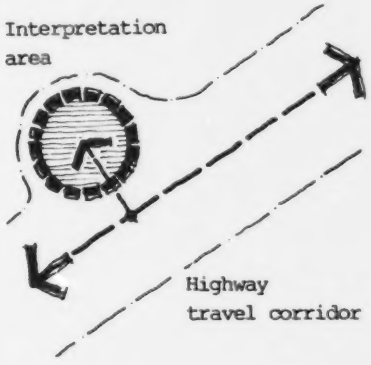
Public interpretation programs are aimed primarily at the general public, but some areas might well act as research and testing areas, displaying various types of cutting patterns and techniques to Ministry staff and to both industries.

4.7.2 Levels of Public Interpretation

- Specially designated areas where some or all aspects of integrated resource management can occur at one place.
- Physiographic forest types and silvicultural methods typical of an area may be represented.
- Low key overall public interpretation programs along highways.

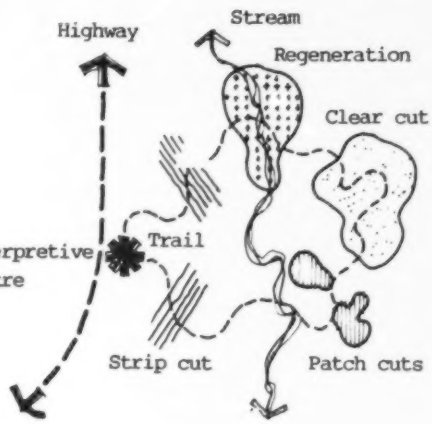
4.7.3 Types and Locations of Interpretation

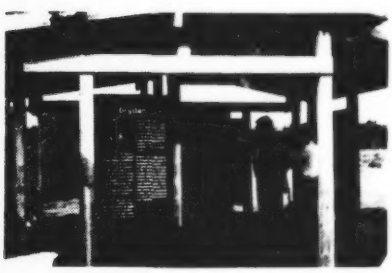
Interpretation and Demonstration areas should be located in the travel corridor along the highways where the maximum number of people will be reached.



Interpretation can be a sequence of "exhibits" presented to drivers, without requiring a stop, and conveying the broad pattern of operations.

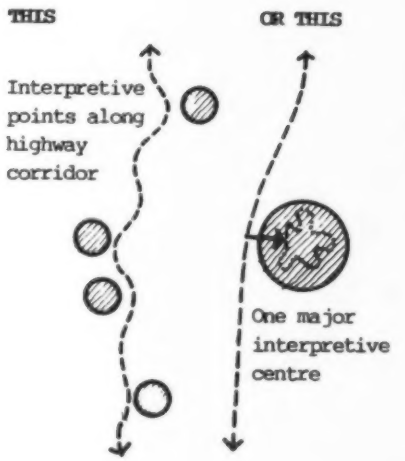
Or, a demonstration area can be developed with parking and a loop trail, allowing understanding of more detailed messages.



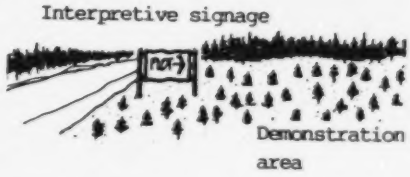


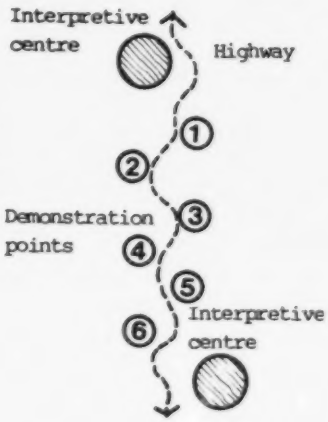
A demonstration area should have the capability to sustain a variety of programs being undertaken by the Ministry and by commercial timber operations.

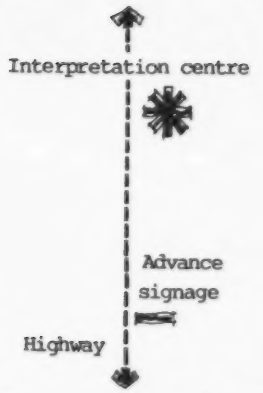
One major demonstration area may be developed, or several smaller sites selected along a travel corridor.



Various types of harvesting operations may occur between public interpretation centres. These sites would be directed at the passing motorist and could demonstrate the ideas presented at an interpretive centre. Good signage systems are essential.

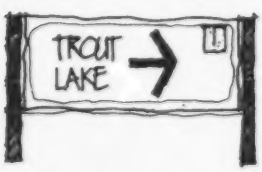




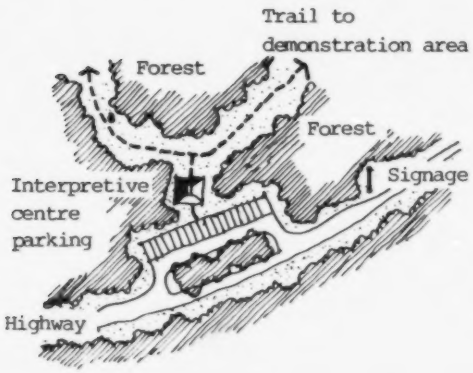


Interpretation centres should be well identified in advance from the highway, and should provide adequate parking and washroom facilities, present interesting information, and possibly provide a demonstration area with trail access.

1 Initial signage

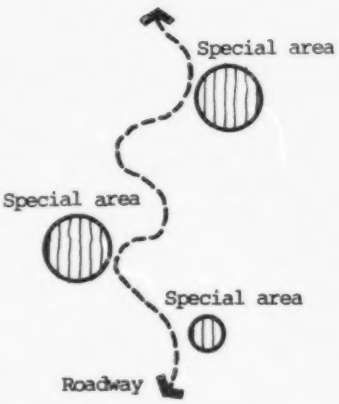


2 Detailed signage



Interpretation centres may be located on lakes where there is no conflict with tourist operations. These centres would allow public access to the lake, provide interpretation of adjacent logging practices along the shoreline, and perhaps provide a water-oriented recreational activity.

Secondary timber roads that may become public routes after harvesting is complete should take potential interpretive sites into consideration when planning the timber road location.



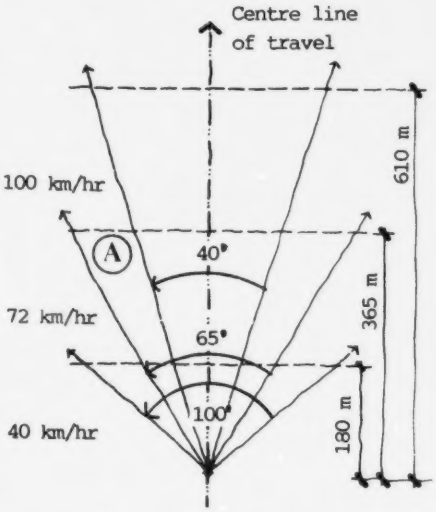
Any demonstration area to be seen from the highway should be located where there will be no reduction in road safety. Avoid placing signage or demonstration areas on curves or at other dangerous locations.

Pamphlets and maps can help the public to understand timber management operations.

An interpretive centre in the field may be only one point of an overall tour which demonstrates to the public where and how trees are harvested, the different methods of transporting the timber, the various mill activities, and the final products resulting from the cutting operation.

4.7.4 Signage

For the motorist on the highway, 3/10 of a second is needed for the eye to focus on an object. This requires the driver to concentrate his vision on less and less, further and further away, as he increases his speed. At 40 km/h his cone of vision is 100°, and the point on which he focuses his attention is 180 m. At 72 km/h these are 65° and 365 m. At 100 km/h they are 40° and 490-610 m.



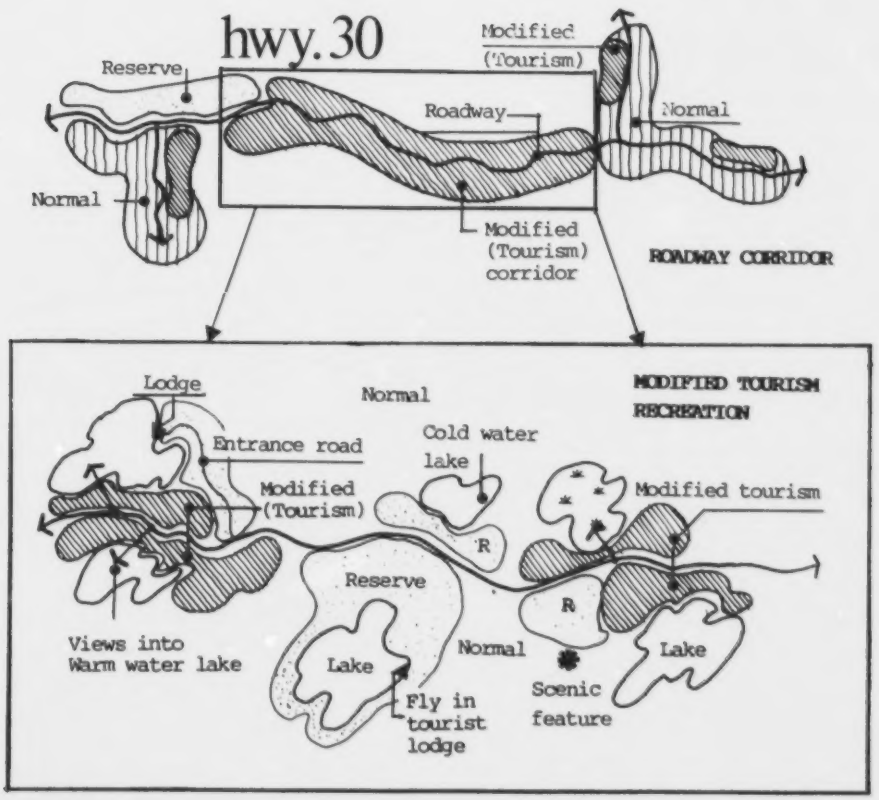
Thus, an object, such as an interpretive sign situated at A on the sketch, will be seen in some detail by a driver travelling at 72 km/h but barely recognized by one travelling at 100 km/h.

Thus, highway signs should be large enough to be read from approaching vehicles consistent with the design-speed for the highway. They should perform the function of an announcement of interest ahead. Highway signs announcing a feature should be located sufficiently far from the feature in the direction of approaching traffic to allow the driver to read, assimilate, and stop at the desired position.

The following examples are provided to assist the reader in understanding the potential application of this manual to field situations. The examples cannot convey the full spectrum of conditions to be encountered by the timber and tourism industries. However, these selected hypothetical examples try to illustrate some of the major opportunities for applying the guidelines, and some potential results.

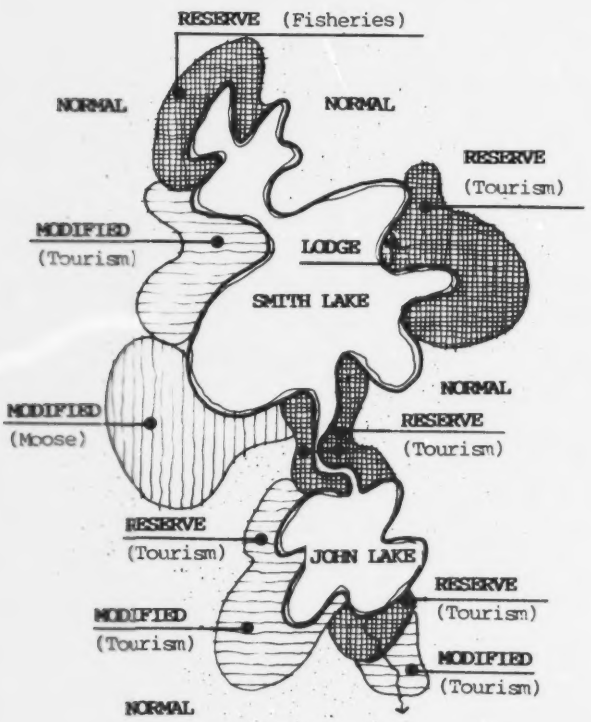
COLLABORATIVE AGREEMENT ON THE ESTABLISHMENT OF MODIFIED HARVESTING OPERATIONS ALONG A SECTION OF HIGHWAY 30 TO PROTECT RECREATIONAL TOURISM VALUES.

DETAILED PLANNING ALLOWS FOR RESERVE IN CRITICAL AREAS, FOR MODIFIED CUTTING PATTERNS TO ALLOW VIEWS AND ACCESS TO SOME WARM-WATER LAKES, AND FOR NORMAL OPERATIONS ELSEWHERE.



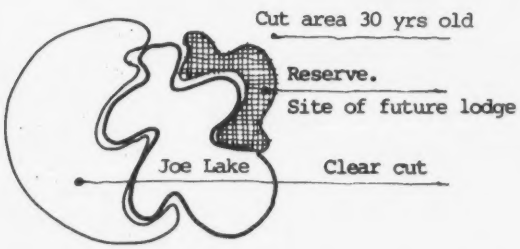
enlargement

EXAMPLE

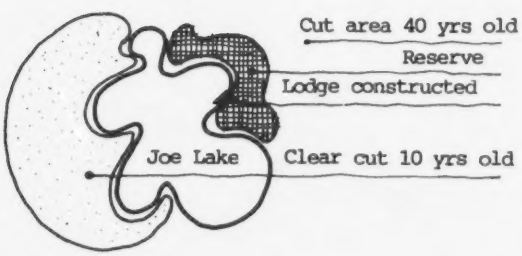


COLLABORATIVE AGREEMENT ON COMBINATION OF RESERVES IN MOST CRITICAL AREAS, MODIFIED OPERATIONS ON MOST BAYS, AND NORMAL OPERATIONS ELSEWHERE. ALSO, NO NEW ROAD ACCESS TO LAKE.

ADVANCE COLLABORATIVE AGREEMENT ON THE LOCATION OF A FUTURE LODGE OPERATION ON JOE LAKE, WHILE ALLOWING CLEAR CUTTING OPERATIONS AT PRESENT.

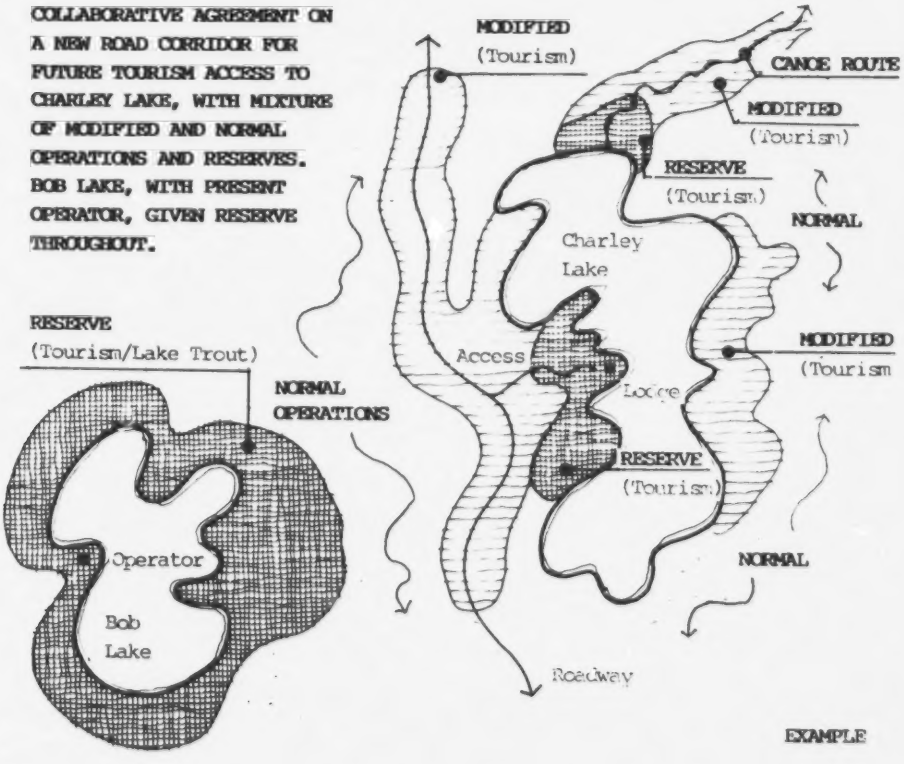


STEP 1



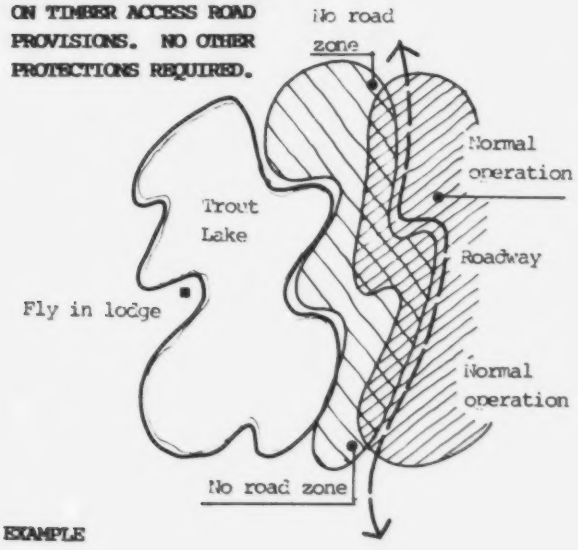
STEP 2

COLLABORATIVE AGREEMENT ON A NEW ROAD CORRIDOR FOR FUTURE TOURISM ACCESS TO CHARLEY LAKE, WITH MIXTURE OF MODIFIED AND NORMAL OPERATIONS AND RESERVES. BOB LAKE, WITH PRESENT OPERATOR, GIVEN RESERVE THROUGHOUT.



EXAMPLE

COLLABORATIVE AGREEMENT ON TIMBER ACCESS ROAD PROVISIONS. NO OTHER PROTECTIONS REQUIRED.



EXAMPLE

6.1 Reference List

The following publications were reviewed during the preparation of this manual.

Alberta Energy and Natural Resources. 1977. Timber Harvest Cut Block Design.

British Columbia, Ministry of Forests. 1981. Forest Landscape Handbook.

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E.B. Eddy Forest Products Ltd. 1983. Forevergreen.

Hough, Stansbury + Associates Limited. n.d. Design Guidelines for Forest Management. Prepared for Ontario Ministry of Natural Resources.

Litton, R. Burton Jr. 1968. Forest Landscape Description and Inventories: A Basis for Land Planning and Design. USDA Forest Service Research Paper PSW-49. Berkeley, Calif.

U.S. Department of Agriculture, Forest Service. 1971. National Forest Management in a Quality Environment.

U.S. Department of Agriculture. 1973. National Forest Landscape Management, Vol. 1. USDA Agriculture Handbook Number 434. Washington, D.C.

U.S. Department of Agriculture. 1974. Forest Plan: White Mountain National Forest. Forest Service, Eastern Region.

U.S. Department of Agriculture. 1977. National Forest Landscape Management, Vol. 2: Range. USDA, Agriculture Handbook No. 484.

6.2 Glossary of Terms

AESTHETICS

A science or philosophy. The study of beauty and ugliness, and the judgment thereof.

AREA OF CONCERN

A geographical area containing values for non-timber users or uses which could be affected by forestry operations, and which may require modifications to those operations.

BACKGROUND

The distant part of a landscape scene; surroundings, especially those behind something and providing harmony or contrast.

BASE LODGE

A tourist facility providing guests with access to outdoor recreational opportunities which are highly dependent on natural resources, while providing a comfortable accomodation base.

BIOPHYSICAL

The combination of biological and physical conditions or factors.

BLOCK CUTS

Modified logging operations which create rectangular cut patterns. The cut and leave blocks of adjacent rows can be overlapped to restrict views through the harvest area.

BOAT CACHES

Locations for seasonal storage of boats in remote areas, maintained by some tourist operators, for use by guests who fly in or portage to remote lakes.

CANOPY

The more or less continuous cover of branches and foliage formed collectively by the crowns of trees.

CHEVRON CUTS

Modified logging operations which create a "V" shaped cut pattern. The cut and leave blocks can be overlapped to restrict views through the harvest area.

CLASS ENVIRONMENTAL ASSESSMENT

A provision within the Environmental Assessment Act whereby similar activities can be planned and monitored as a single action.

CLEAR CUTTING

The removal of the entire merchantable crop of the desired species only.

CLEAR CUT SILVICULTURAL SYSTEM

A silvicultural system involving the harvest of all or most of the merchantable crop of the desired species in one operation to provide the conditions necessary for the establishment and survival of a new forest crop by natural or artificial regeneration.

CONTRAST

Where a difference occurs from one form to another, such as the difference between a man-made architectural form and a natural form.

CURVILINEAR

Contained by or consisting of curved lines.

DEMONSTRATION AREA

Specially designated area where some or all aspects of resource management can occur and be displayed to the public.

ENVIRONMENT

1) air, land or water;

2) plant and animal life, including man;

3) the social, economic, and cultural conditions that influence the life of man or a community;

4) any building, structure, machine, or other device or thing made by man;

5) any solid, liquid, gas, odour, heat, sound, vibration, or radiation resulting directly or indirectly from the activities of man;

6) any part or combination of the foregoing and the interrelationships between any two or more of them.

ESTABLISHMENT

The process of developing a crop (particularly in the field) to the stage at which the young trees may be considered established, i.e., safe from normal adverse influences (e.g., frost, drought, weeds, or browsing) and no longer in need of special protection or special tending but only routine cleaning, thinning, and pruning.

FEATURE

A distinctive item that arrests attention.

FOREGROUND

The nearest part of a landscape scene; surroundings, especially those in front of something.

FULL TREE LOGGING SYSTEM

A logging system which removes the entire tree, including branches and tops, after separation from the stump, to the roadside for further processing.

GEOMETRIC

Involving shapes with straight lines and regular patterns.

GEOMORPHOLOGY

The study of the physical features of the earth, or the arrangement and form of the earth's crust.

HARVESTING

The removal of merchantable wood from the forest for utilization, comprising felling, sometimes further initial processing, and extraction.

HARVESTING OPERATION

The process of removing merchantable wood from the forest stand.

INTERPRETATION

An educational activity which aims to reveal meanings and relationships through the use of original objects by illustrative media, rather than to simply communicate practical information. The chief aim is provocation rather than information.

LANDFORM

A natural feature of the earth's surface.

MANAGEMENT PLAN

1) A plan prepared under the Crown Timber Act and having a renewable term of 20 years.

2) The means by which forest policy, aims, and objectives are translated into a continuity of specific treatments for a particular forest area..

MODIFIED OPERATIONS

Standard forest harvesting activities which are altered to protect or enhance special values that could otherwise be damaged, or for any other reason.

OBSERVER POSITION

The location from which an individual views the surrounding landscape.

OUTPOST CAMPS

A tourist facility providing rudimentary facilities in remote settings to small groups or individuals seeking "a high quality" wilderness experience. Camps are normally accessible by aircraft only and provide a high quality of hunting and/or sport fishing.

PANORAMA

An unlimited view of a wide expanse of terrain; a continuous view, usually natural.

PATCH CUTS

Modified logging operations which create irregular cut forms. These cut forms can be integrated with the topography of the harvest area.

PATTERN

The configuration that results from the removal of trees where harvesting operations occur.

PHYSIOGRAPHY

Description of the natural features of the surface of the earth.

PLAN OF OPERATION

A plan prepared as part of timber management, describing harvesting, road development, and related operations over a five year period.

PRIMARY ROADS

In forestry terms, a primary road is a first class road, usually not paved, which opens a large area to logging operations. It may or may not be open to public traffic.

PROMINENT

Jutting out or readily noticeable.

PROTECTION FOREST RESERVE

An area managed primarily to exert beneficial influence on soil, water, and landscapes, or for any other purpose when the production of merchantable timber, if any, is incidental.

REGENERATION

The renewal of a forest crop by natural or artificial means; the renewal of a tree crop, whether by natural or artificial means; the young crop itself. A stand will be considered regenerated at the time of initiation of the new crop.

REMOTENESS

The extent to which a sense of isolation is evident.

RESIDUAL TREES

The remaining uncut trees following logging of an area.

ROTATION

The planned number of years between the year of final felling and the harvest of the next regenerated forest.

SCALE

Generally a size relationship between an object and its environment or surroundings.

SCARIFICATION

The operation of breaking up the forest floor and topsoil preparatory to natural regeneration or direct seeding. Making mineral soil accessible to the tiny roots of the new crop is the main purpose.

SECONDARY ROADS

Roadway networks which provide access from primary roads to the general area of harvesting operations.

SELECTION SILVICULTURAL SYSTEM

The removal of mature trees, either as scattered individuals or as small groups at relatively short intervals and repeated indefinitely. The objective is representation of all age classes distributed throughout the stand.

SILVICULTURE

Generally the science and art of cultivating (i.e., growing and tending) forest crops, based on knowledge of silvics. More particularly, the theory and practice of controlling the establishment, composition, and growth of forests.

SITE PREPARATION

Disturbance of the forest floor and topsoil to create suitable conditions for natural regeneration, seeding, or planting.

SHELTERWOOD SILVICULTURAL SYSTEM

The removal of mature timber in a series of two or more cuts for the purpose of obtaining natural regeneration under the shelter of the residual stand.

SHORTWOOD LOGGING SYSTEMS

The supply of log lengths to the roadside for transportation as opposed to tree length or whole tree operations where the whole tree stem is moved intact to the roadside.

SKIDDING TRAILS

Trails created by skidding timber from the stand to landings or to the tertiary roadway.

SLASH

A combination of debris of tree limbs and tops which result following various harvesting operations.

SPATIAL DEFINITION

The three-dimensional elements that enclose a space, such as the earth, the trees, and the sky.

STAND

A forest is composed of various stands. These are areas where the mix of trees composing them is uniform throughout. One stand will vary from its neighbour in some way (e.g., age class, species mix, height, etc.), but within its own boundaries will be uniform.

STRIP CUTTING

Removal of the crop in strips in one or more operations, generally for encouraging regeneration before the neighbouring leave strips are eventually cut. (Note: where the configuration of the cut is more properly described as a block than as a strip, the term block cut is often used.)

TERRAIN

A tract of ground considered with reference to its surface features.

TERTIARY ROADS

Roadways which provide temporary access from secondary roads to specific areas of harvesting activity.

TIMBER MANAGEMENT PLAN

A long range plan of road development and harvesting having a 20 year projection. This plan is reviewed and revised every five years, maintaining the 20 year projection (see Management Plan above).

TIMBER RESERVES

Forested areas in which harvesting operations of any kind are prohibited.

TOURIST HIGHWAYS

Primary and secondary highways having scenic value or recreational opportunities for the travelling public.

TREE LENGTH LOGGING SYSTEM

The supply of tree lengths, with limbs and tops removed at the stump, to the roadside.

UNDULATING

A wavy appearance, such as the moving in and out of a forest edge.

VIEW

That which is seen or lies within the range of vision; usually natural.

VISTA

A view which is ordinarily focused or constrained by adjacent trees, houses, etc.

VISUAL

A mental image attained by sight.

WILDERNESS

Public lands set apart for the preservation of the area as nearly as it may be in its natural state. Usually achieved within Wilderness Class Provincial Parks.

YIELD

The volume of timber that may be harvested within one rotation.